HP ProLiant BL280c G6 Server Blade Maintenance and Service Guide

Abstract

This guide describes identification and maintenance procedures, diagnostic tools, specifications and requirements for hardware components and software. This guide is for an experienced service technician. HP assumes you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.

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Contents

Customer self repair 5
Parts only warranty service 5
Illustrated parts catalog 16
Server blade components 16
Removal and replacement procedures 22
Required tools 22
Safety considerations 22
Preventing electrostatic discharge 22
Server blade warnings and cautions 22
Symbols on equipment 23
Server blade preparation 23
Power down the server blade 23
Remove the server blade 24
Access panel 25
Air baffle 25
Front bezel assembly 28
DIMMs 28
Hard drive 29
Server blade release lever 32
Release button 33
Mezzanine card 34
USB/SD card module 35
Heatsink blank 37
Heatsink 37
Processor 39
System battery 45
System board 45
HP Trusted Platform Module 53
Diagnostic tools 54
Troubleshooting resources 54
HP Insight Diagnostics 54
HP Insight Diagnostics survey functionality 54
Integrated Management Log 55
Array Diagnostic Utility 55
HP Systems Insight Manager 55
HP Insight Remote Support software 56
USB support and functionality 56
USB support 56
Internal USB functionality 56
External USB functionality 57
Cabling 58
SATA hard drive cabling 58
Optional SAS hard drive cabling 58
Using the HP c-Class Blade SUV Cable 59

Connecting locally to a server blade with video and USB devices 59
Accessing a server blade with local KVM 59
Accessing a server blade with local media devices 60
Component identification 62
Front panel components 62
Front panel LEDs and buttons 63
System board components 64
Mezzanine connector definitions 64
DIMM slot locations 65
DIMM identification 65
Hard drive connector identification 66
System maintenance switch 66
HP c-Class Blade SUV Cable 67
Specifications 68
Environmental specifications 68
Server blade specifications 68
Acronyms and abbreviations 69
Index 70

Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (http://www.hp.com/go/selfrepair).

Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Service de garantie "pièces seules"

Votre garantie limitée HP peut inclure un service de garantie "pièces seules". Dans ce cas, les pièces de rechange fournies par HP ne sont pas facturées.

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (http://www.hp.com/go/selfrepair).

Servizio di garanzia per i soli componenti

La garanzia limitata HP può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, HP fornirà gratuitamente le parti di ricambio.

Per il servizio di garanzia per i soli componenti è obbligatoria la formula CSR che prevede la riparazione da parte del cliente. Se il cliente invece richiede la sostituzione ad HP, dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das

defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (http://www.hp.com/go/selfrepair).

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

Ihre HP Garantie umfasst möglicherweise einen Parts-only Warranty Service (Garantieservice ausschließlich für Teile). Gemäß den Bestimmungen des Parts-only Warranty Service stellt HP Ersatzteile kostenlos zur Verfügung.

Für den Parts-only Warranty Service ist das CSR-Verfahren zwingend vorgegeben. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no

enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Servicio de garantía exclusivo de componentes

La garantía limitada de HP puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, HP le facilitará los componentes de repuesto sin cargo adicional alguno.

Para este servicio de garantía exclusivo de componentes, es obligatoria la sustitución de componentes por parte del usuario (CSR). Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (http://www.hp.com/go/selfrepair).

Garantieservice "Parts Only"

Het is mogelijk dat de HP garantie alleen de garantieservice "Parts Only" omvat. Volgens de bepalingen van de Parts Only garantieservice zal HP kosteloos vervangende onderdelen ter beschikking stellen.

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

Serviço de garantia apenas para peças

A garantia limitada da HP pode incluir um serviço de garantia apenas para peças. Segundo os termos do serviço de garantia apenas para peças, a HP fornece as peças de reposição sem cobrar nenhuma taxa.

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

顧客自己修理保証サービス

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数の顧客自己修理（CSR）部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口に電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。顧客自己修理の際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

部品のみ保証サービス

HP保証サービスには、部品のみ保証サービスが適用される場合があります。このサービスでは、交換部品は無償で提供されます。

部品のみ保証サービスにおいては、CSR部品をお客様により交換作業していただくことが必須となります。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費はお客様の負担となります。

客户自行维修

HP 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 HP（或 HP 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，HP 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，HP 可能会要求您支付更换费用。客户自行维修时，HP 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (http://www.hp.com/go/selfrepair)。

仅部件保修服务

您的 HP 有限保修服务可能涉及仅部件保修服务。根据仅部件保修服务条款的规定，HP 将免费提供更换的部件。

仅部件保修服务要求进行 CSR 部件更换。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP（或 HP 服務供應商或維修夥伴）辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

僅限零件的保固服務

您的「HP 有限保固」可能包含僅限零件的保固服務。在僅限零件的保固服務情況下，HP 將免費提供替換零件。

針對僅限零件的保固服務，CSR 零件替換是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(http://www.hp.com/go/selfrepair)를 참조하십시오.

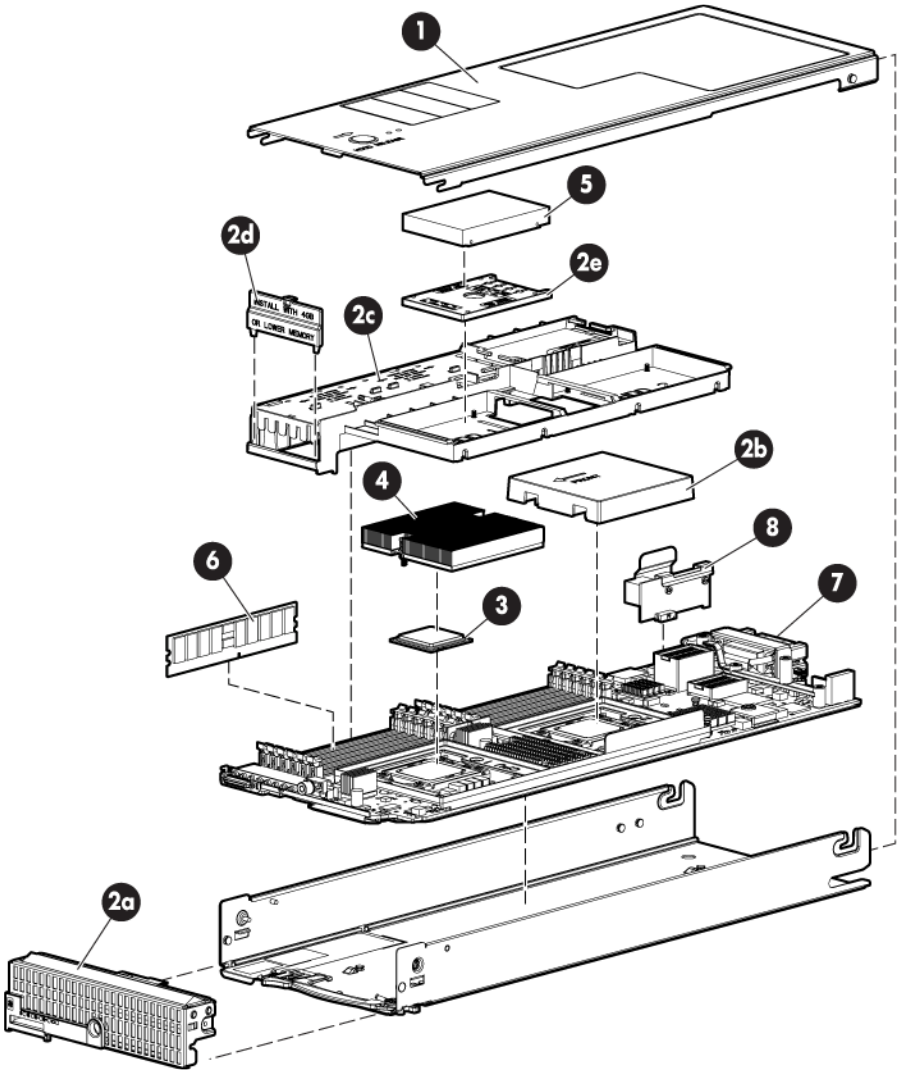
부품 제공 보증 서비스

HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Illustrated parts catalog

Server blade components



Item	Description	Spare part number	Customer self repair (on page 5)
	Mechanical components		
1	Access panel	531618-001	Mandatory[1]
2	Hardware and plastics kit	531617-001	Mandatory[1]
	a) Front bezel assembly, with two front bezel assembly screws, T-15, 6 mm	—	—
	b) Heatsink blank	—	—
	c) Air baffle	—	—

Item	Description	Spare part number	Customer self repair (on page 5)
	d) Air flow covers (2)	—	—
	e) Hard drive spacer (2)	—	—
	f) Hard drive spacer screws, Phillips head, 9.25 mm, (8)*	—	—
	g) Midline hard drive screws, Phillips head, 4.76 mm, (8)*	—	—
	h) Enclosure connector cover*	—	—
	i) T-15 Torx screwdriver*	—	—
	System components		
3	Processors	—	—
	a) 1.86-GHz Intel® Xeon® E5502 processor**	490075-001	Mandatory[1]
	b) 2.00-GHz Intel® Xeon® E5504 processor* **	490074-001	Mandatory[1]
	c) 2.13-GHz Intel® Xeon® E5506 processor* **	506013-001	Mandatory[1]
	d) 2.26-GHz Intel® Xeon® E5520 processor* **	490073-001	Mandatory[1]
	e) 2.40-GHz Intel® Xeon® E5530 processor* **	507248-001	Mandatory[1]
	f) 2.53-GHz Intel® Xeon® E5540 processor* **	507249-001	Mandatory[1]
	g) 2.13-GHz Intel® Xeon® L5506 processor* **	513597-001	Mandatory[1]
	h) 2.26-GHz Intel® Xeon® L5520 processor* **	508567-001	Mandatory[1]
	i) 2.66-GHz Intel® Xeon® X5550 processor* **	490070-001	Mandatory[1]
	j) 2.80-GHz Intel® Xeon® X5560 processor* **	490069-001	Mandatory[1]
	k) 2.93-GHz Intel® Xeon® X5570 processor* **	506012-001	Mandatory[1]
	l) 2.40-GHz Intel® Xeon® L5530 processor* **	536584-001	Mandatory[1]
	m) 2.00-GHz Intel® Xeon® E5503 processor* **	594889-001	Mandatory[1]
	n) 2.40-GHz Intel® Xeon® E5620 processor* **	594887-001	Mandatory[1]
	o) 2.53-GHz Intel® Xeon® E5630 processor* **	594886-001	Mandatory[1]
	p) 2.66-GHz Intel® Xeon® E5640 processor* **	594885-001	Mandatory[1]
	q) 2.13-GHz Intel® Xeon® L5630 processor* **	594891-001	Mandatory[1]
	r) 2.26-GHz Intel® Xeon® L5640 processor* **	594890-001	Mandatory[1]
	s) 2.66-GHz Intel® Xeon® X5650 processor* **	594884-001	Mandatory[1]
	t) 2.80-GHz Intel® Xeon® X5660 processor* **	594883-001	Mandatory[1]
	u) 2.93-GHz Intel® Xeon® X5670 processor* **	594882-001	Mandatory[1]
	v) 3.06-GHz Intel® Xeon® X5675 processor* **	638134-001	Mandatory[1]
	w) 3.20-GHz Intel® Xeon® X5672 processor* **	638135-001	Mandatory[1]
	x) 2.53-GHz Intel® Xeon® E5649 processor* **	628695-001	Mandatory[1]
	y) 2.40-GHz Intel® Xeon® E5645 processor* **	628696-001	Mandatory[1]
4	Heatsink	508954-001	Mandatory[1]

Item	Description	Spare part number	Customer self repair (on page 5)
5	Hard drives	—	—
	a) 120-GB, SATA, SFF, 5,400-rpm	459322-001	Mandatory[1]
	b) 250-GB, SATA, SFF, 5,400-rpm*	460427-001	Mandatory[1]
	c) 32-GB, SATA, SFF, SSD*	461332-001	Mandatory[1]
	d) 64-GB, SATA, SFF, SSD*	461333-001	Mandatory[1]
	e) 146-GB, SAS, SFF, 10,000-rpm, 6G*	537819-001	Mandatory[1]
	f) 300-GB, SAS, SFF, 10,000-rpm, 6G*	537820-001	Mandatory[1]
	g) 500-GB, SATA, SFF, 7,200-rpm*	507753-001	Mandatory[1]
	h) 160-GB, SATA, SFF, 7,200-rpm*	530933-001	Mandatory[1]
	i) 60-GB, SATA,SFF, 3G*	572252-001	Mandatory[1]
	j) 600-GB, SAS, SFF, 10,000-rpm, 6G*	590826-001	Mandatory[1]
	k) 72-GB, SAS, SFF, 15,000-rpm, 6G*	537821-001	Mandatory[1]
	l) 500-GB, SATA, SFF, 7,200-rpm, 3G*	508036-001	Mandatory[1]
	m) 120-GB, SATA, SFF, 3G*	572253-001	Mandatory[1]
	Boards		
6	DIMMs	—	—
	a) PC3-10600E (DDR3-1333) 1-GB	501539-001	Mandatory[1]
	b) PC3-10600R (DDR3-1333) 2-GB*	501533-001	Mandatory[1]
	c) PC3-10600E (DDR3-1333) 2-GB*	501540-001	Mandatory[1]
	d) PC3-10600R (DDR3-1333) 2Rx4 4-GB*	501534-001	Mandatory[1]
	e) PC3-8500R (DDR3-1066) 4-GB*	501535-001	Mandatory[1]
	f) PC3-8500R (DDR3-1066) 8-GB*	519201-001	Mandatory[1]
	g) PC3-10600R (DDR3-1333) 8-GB*	501536-001	Mandatory[1]
	h) PC3-10600R (DDR3-1333) 1Rx4 4-GB*	595424-001	Mandatory[1]
	i) PC3L-10600R (DDR3-1333) 4-GB*	606426-001	Mandatory[1]
	j) PC3L-10600R (DDR3-1333) 8-GB*	606427-001	Mandatory[1]
	k) PC3-10600E (DDR3-1333) 4-GB*	501541-001	Mandatory[1]
	l) PC3-8500R (DDR3-1066) 16-GB*	501538-001	Mandatory[1]
	m) PC3L-10600R (DDR3-1333) 16-GB*	632204-001	Mandatory[1]
	n) PC3L-10600E (DDR3-1333) 4-GB	619974-001	Mandatory[1]
7	System board	531337-001	Mandatory[1]
8	USB/SD card module	534756-001	Mandatory[1]
9	Trusted Platform Module*	505836-001	Mandatory[1]
	Miscellaneous		
10	System battery*	234556-001	Mandatory[1]
11	Ethernet mezzanine*	—	—

Item	Description	Spare part number	Customer self repair (on page 5)
	a) HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem	436011-001	Mandatory[1]
	b) HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	419330-001	Mandatory[1]
	c) HP NC360m Dual Port 1GbE BL-c Adapter	448068-001	Mandatory[1]
	d) HP NC364m Quad Port 1GbE BL-c Adapter	448066-001	Mandatory[1]
	e) HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	430548-001	Mandatory[1]
	f) HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	462748-001	Mandatory[1]
	g) HP NC512m Dual Port 10GbE Multifunction BL-c Adapter	448515-001	Mandatory[1]
	h) HP NC532m Dual Port 10GbE BL-c Adapter	466308-001	Mandatory[1]
	i) QLogic QMH4062 1GbE iSCSI Adapter for HP BladeSystem c-Class	488081-001	Mandatory[1]
	j) HP NC550m PCIe x8 Dual Port 10GbE Flex-10 Ethernet Adapter	586445-001	Mandatory[1]
	k) HP NC542m Dual Port Flex-10 10GbE Multifunction BL-c Adapter	539933-001	Mandatory[1]
	l) HP NC522m Dual Port 10GbE Multi-function BL-c Adapter	466309-001	Mandatory[1]
	m) HP NC551m Dual Port FlexFabric 10Gb Converged Network Adapter	580238-001	Mandatory[1]
	n) HP BLc NC552m Flex-10GbE Dual Port Adapter	610724-001	Mandatory[1]
12	Fibre Channel mezzanine*	—	—
	a) Emulex LPe1105-HP 4Gb FC HBA for HP c-Class BladeSystem	405921-001	Mandatory[1]
	b) QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	405920-001	Mandatory[1]
	c) Emulex LPe 1205-HP 8Gb FC HBA for HP c-Class BladeSystem	456978-001	Mandatory[1]
	d) QLogic QMH2562 8Gb FC HBA for HP c-Class BladeSystem	455869-001	Mandatory[1]
	e) Brocade 804 8Gb FC HBA for HP BladeSystem c-Class	592045-001	Mandatory[1]
13	Infiniband mezzanine*	—	—
	a) HP 4X QDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	519133-001	Mandatory[1]
	b) HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	450604-001	Mandatory[1]
	c) HP 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	410500-001	Mandatory[1]
	d) HP 4X QDR QLogic InfiniBand Dual Port Mezzanine HCA for c-Class BladeSystem	583999-001	Mandatory[1]
	e) HP 4X QDR InfiniBand ConnectX-2 Dual Port Mezzanine HCA for c-Class BladeSystem	593411-001	Mandatory[1]
14	Server blade release lever kit*	531232-001	Mandatory[1]
	a) Server blade release lever	—	—

Item	Description	Spare part number	Customer self repair (on page 5)
	b) Server blade release button	—	—
	c) Server blade release lever spring	—	—
	d) Server blade release lever nut	—	—
	Cables		
15	HP c-Class Blade SUV Cable*	416003-001	Mandatory[1]
16	Hard drive power and data cable*	535670-001	Mandatory[1]

*Not shown
**Do not mix processors with different speeds or cache sizes.
[1]Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
[2]Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.
[3]No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.
[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un “No” nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra “No” en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca “No” (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

[1]Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

[2]Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据为您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

[3]No: 否 — 某些 HP 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，HP 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

[1]Mandatory: 強制的 — 客戶自行維修所使用的零件是強制性的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

[2]Optional: 選購的 — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

[3]No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

[2] Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

[3] No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-15 Torx screwdriver (provided inside the server blade)
- No. 1 Phillips screwdriver
- HP Insight Diagnostics software ("HP Insight Diagnostics" on page 54)

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Server blade warnings and cautions

WARNING: To reduce the risk of shock or injury from high-current electrical energy, do not remove the server blade access panel and then install the server blade into the enclosure.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: Do not operate the server blade with the access panel removed. Operating the server blade in this manner results in improper airflow and improper cooling that can lead to thermal damage.

CAUTION: When performing non-hot-plug operations, you must power down the server blade and/or the system. However, it may be necessary to leave the server blade powered up when performing other operations, such as hot-plug installations or troubleshooting.

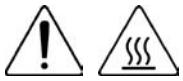
Symbols on equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.

This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.
WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.

This symbol on an RJ-45 receptacle indicates a network interface connection.
WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.
WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

4.31 - 4.54 kg
9.50 - 10.00 lb

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.
WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.
WARNING: To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

Server blade preparation

To service any internal server blade component, power down the server blade and remove it from the enclosure.

Power down the server blade

Before powering down the server blade for any upgrade or maintenance procedures, perform a backup of critical server data and programs.

Depending on the Onboard Administrator configuration, use one of the following methods to power down the server blade:

- Use a virtual power button selection through iLO 2.

  This method initiates a controlled remote shutdown of applications and the OS before the server blade enters standby mode.

- Press and release the Power On/Standby button.

  This method initiates a controlled shutdown of applications and the OS before the server blade enters standby mode.

- Press and hold the Power On/Standby button for more than 4 seconds to force the server blade to enter standby mode.

  This method forces the server blade to enter standby mode without properly exiting applications and the OS. It provides an emergency shutdown method if an application stops responding.

- Execute one of the following commands using the Onboard Administrator CLI:

  ```
  poweroff server [bay number]
  ```

  or

  ```
  poweroff server [bay number] force
  ```

  The first command initiates a controlled shutdown of applications and the OS before the server blade enters standby mode. The second form of the command forces the server blade to enter standby mode without exiting applications and the OS. This emergency method forces a shutdown if an application stops responding.

- Use the Onboard Administrator GUI to initiate a shutdown:

  a. Select the **Enclosure Information** tab, and then select the **Overall** checkbox in the Device Bays item.

  b. Initiate a shutdown from the Virtual Power menu:

  — Select **Momentary Press** to initiate a controlled shutdown of applications and the OS.

  — Select **Press and Hold** to initiate an emergency shutdown of applications and the OS.

IMPORTANT: When the server blade is in standby mode, auxiliary power is still being provided. To remove all power from the server blade, remove the server blade from the enclosure.

After initiating a virtual power down command, be sure that the server blade is in standby mode by observing that the system power LED is amber.

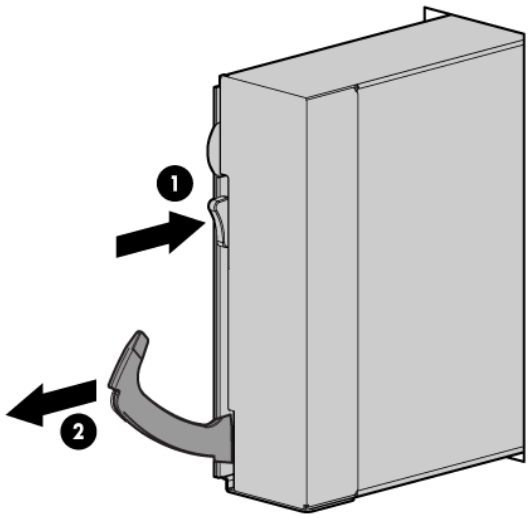
Remove the server blade

CAUTION: Do not use the server blade release lever to lift or carry the server blade. Always support the weight of the server blade by handling the chassis directly. Improper use can damage the release lever and the server blade.

To remove the component:

1. Identify the proper server blade.
2. Power down the server blade (on page 23).

3. Remove the server blade.



4. Place the server blade on a flat, level work surface.

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: To prevent damage to electrical components, properly ground the server blade before beginning any installation procedure. Improper grounding can cause ESD.

Access panel

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Press the access panel release button.
4. Slide the access panel towards the rear of the server blade, and then lift to remove the panel.

To replace the component:

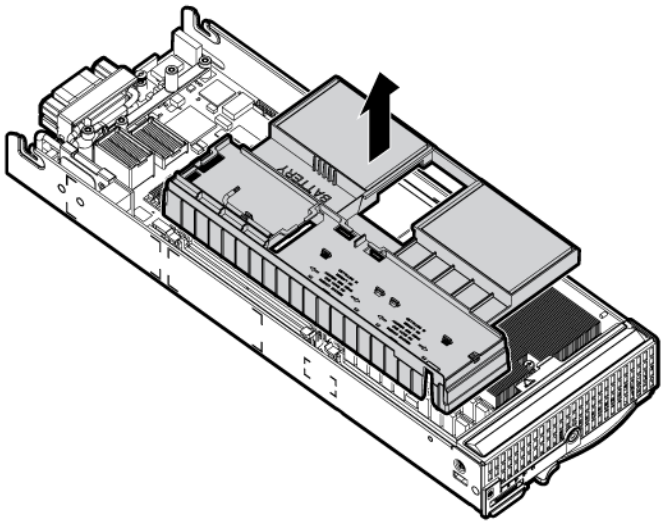
1. Place the access panel on top of the server blade.
2. Slide the access panel forward until it clicks into place.

Air baffle

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).

5. Remove the air baffle.



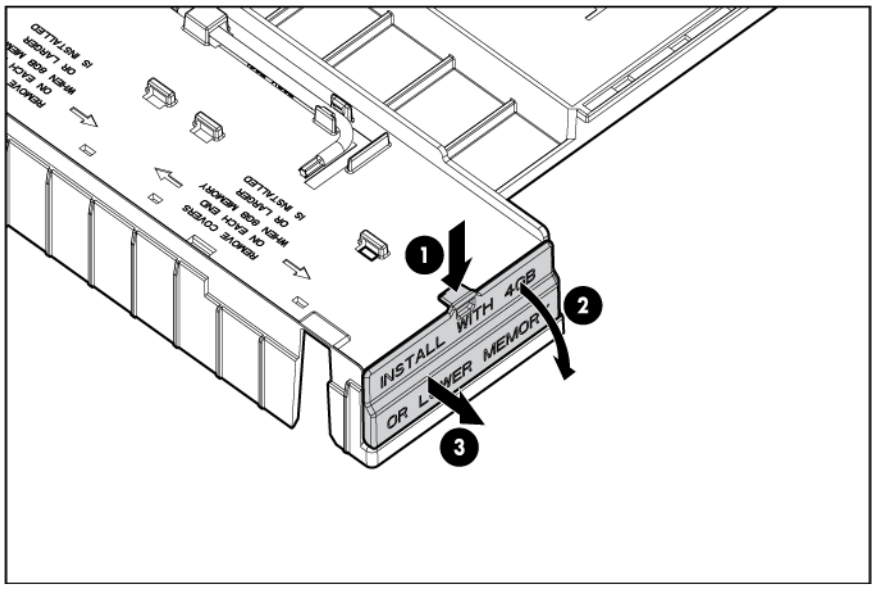
6. Remove all hard drives ("Hard drive" on page 29).

To replace the component, reverse the removal procedure.

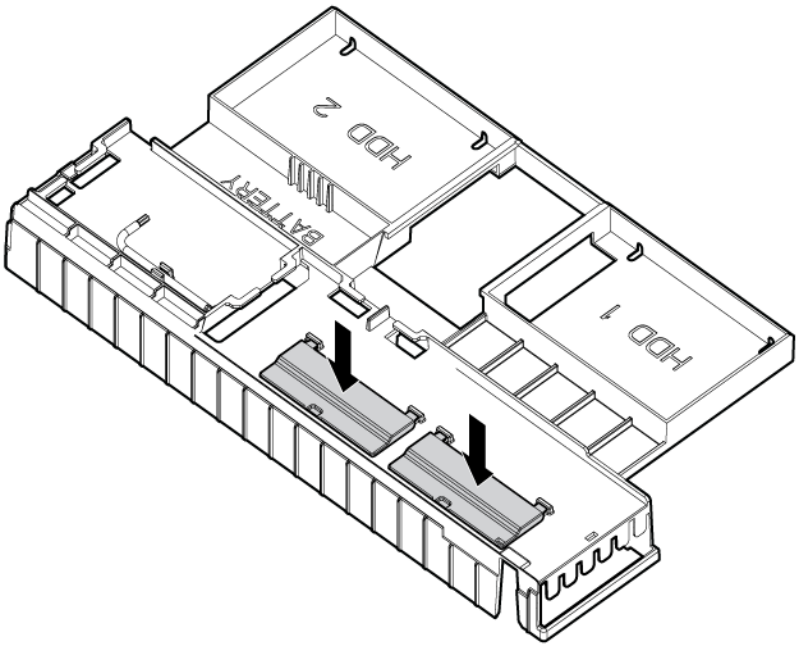
Before installing DIMMs in the server blade, always configure the air baffle depending on which DIMMs are being installed.

For 8-GB DIMMs or larger, configure the air baffle:

1. Remove the air flow cover from each end of the air baffle.

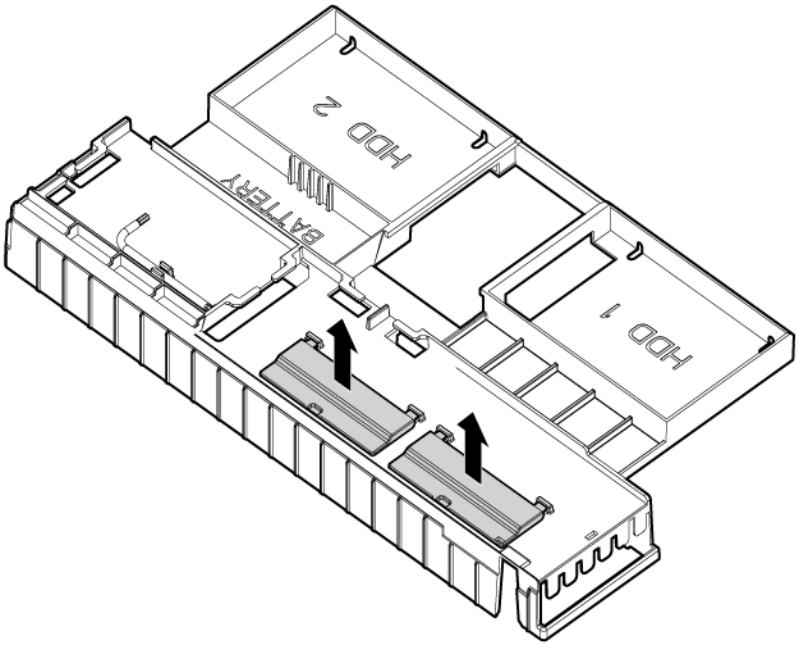


2. To store the air flow covers, install the two air flow covers on the top of the air baffle.

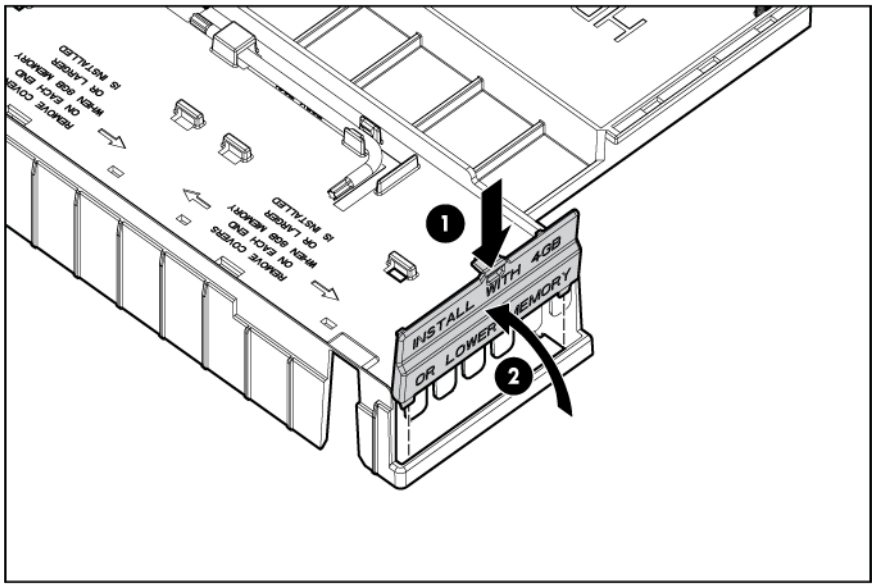


For all other DIMMs, configure the air baffle:

1. Remove the two air flow covers from the top of the air baffle.



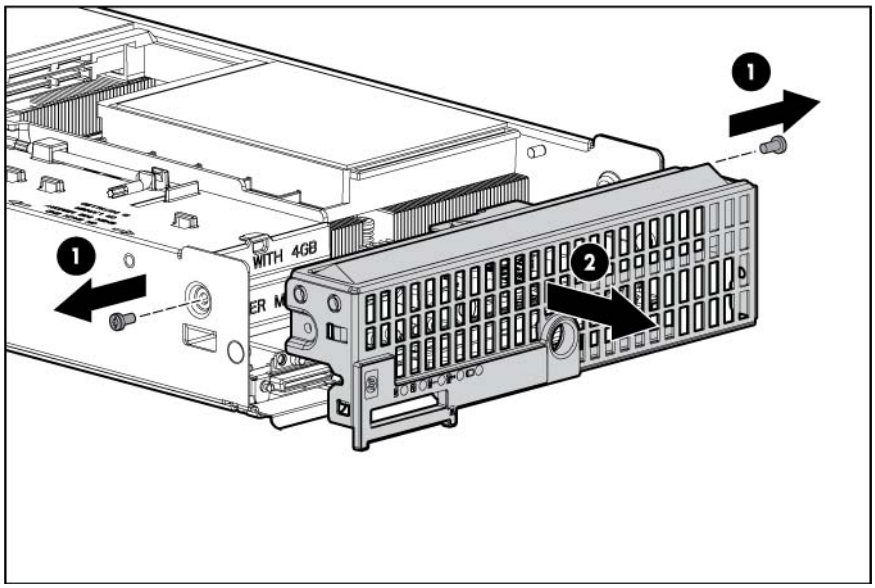
2. Install the air flow covers on each end of the air baffle.



Front bezel assembly

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. Remove the front bezel assembly.



To replace the component, reverse the removal procedure.

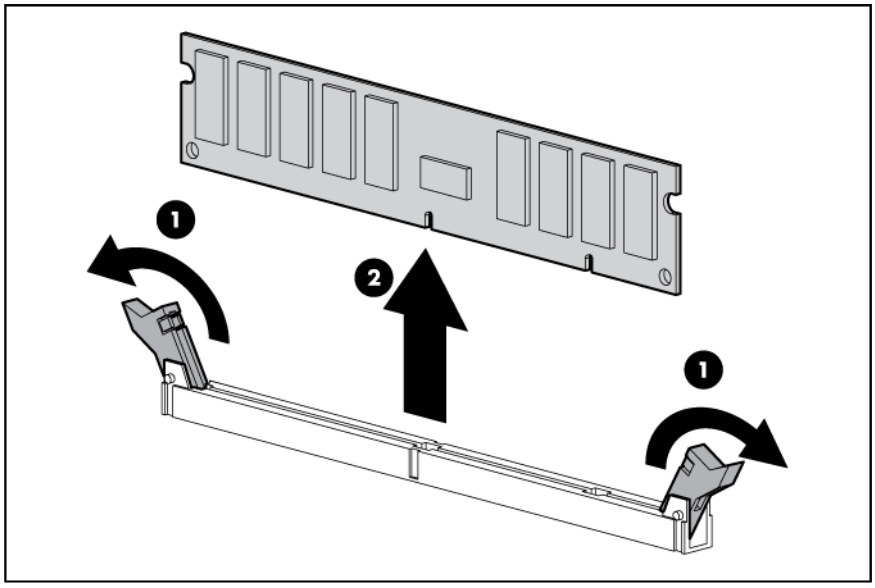
DIMMs

IMPORTANT: This server blade does not support mixing RDIMMs and UDIMMs. Attempting to mix these two types causes the server to halt during BIOS initialization.

To identify the DIMMs installed in the server blade, see "DIMM identification (on page 65)."

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
5. Remove the air baffle ("Air baffle" on page 25).
6. Remove the DIMM.



To replace the component, reverse the removal procedure.

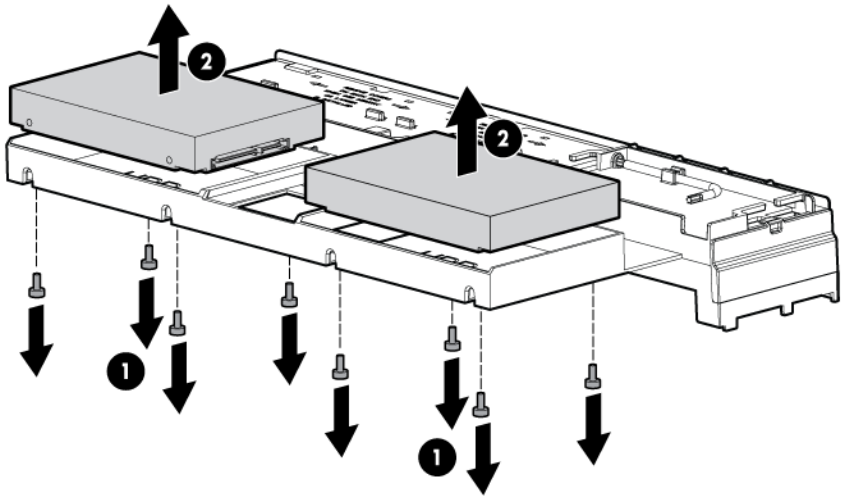
Hard drive

This section shows procedures for replacing both hard drives in the server blade. Replace only the failed hard drive.

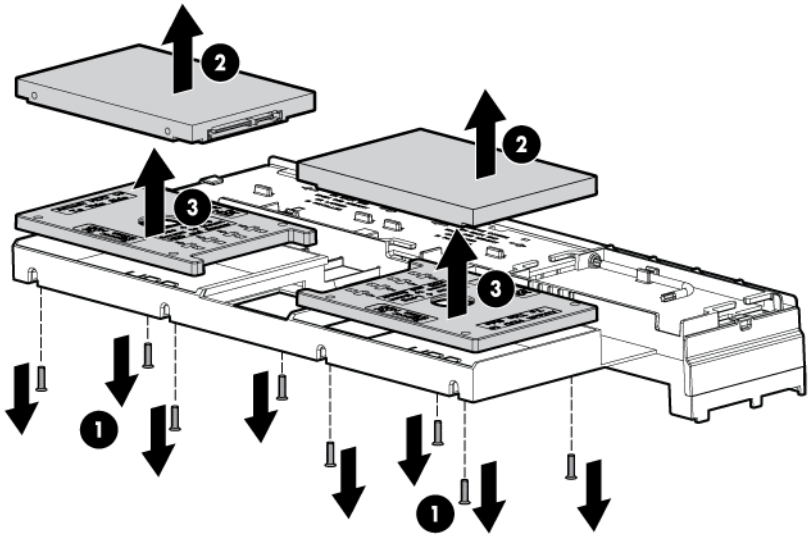
To remove the component:

1. Back up all server data on the hard drive.
2. Power down the server blade (on page 23).
3. Remove the server blade (on page 24).
4. Remove the access panel ("Access panel" on page 25).
5. Disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
6. Remove the air baffle ("Air baffle" on page 25).
7. Disconnect all hard drive cables ("Hard drive connector identification" on page 66).

8. Remove all SAS or SATA hard drives:
   - Midline SAS or SATA hard drives



   - SATA hard drives (9.5 mm) with hard drive spacer



△ **CAUTION:** Failure to follow the hard drive installation guidelines can cause hardware damage.

Always observe the installation guidelines:

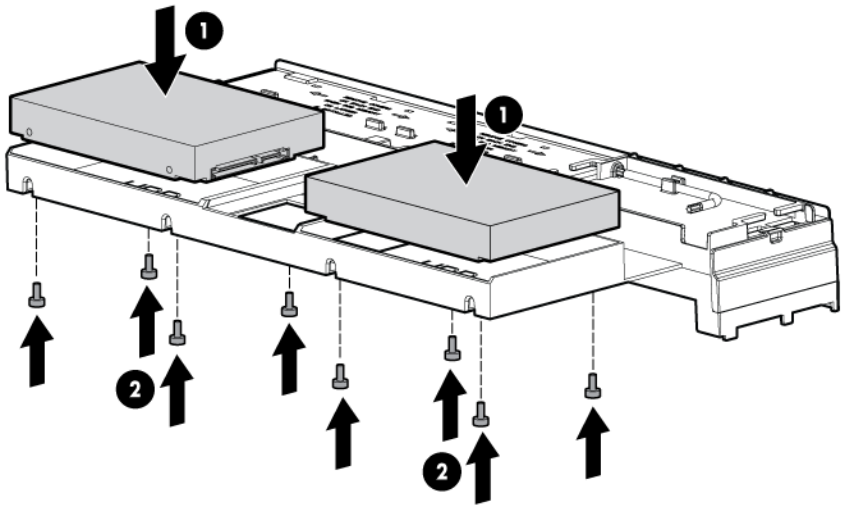
- Always install a spacer when installing a 9.5-mm SATA hard drive.
- Be sure to use the proper screws when installing the hard drive:
  - When installing a 9.5-mm SATA hard drive and a hard drive spacer, install the long hard drive screws that are stored on the hard drive spacer.
  - When installing a midline SATA hard drive or a SAS hard drive, install the standard hard drive screws that ship with the server blade.

To replace the component:

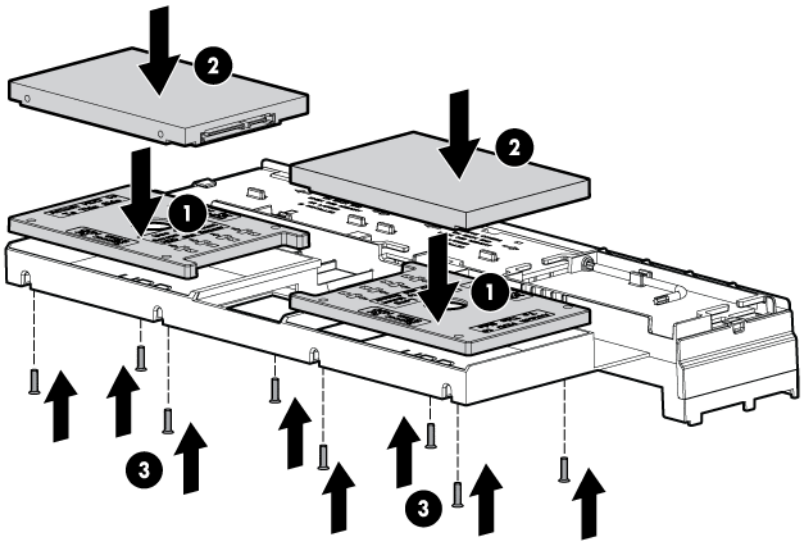
1. Install the hard drives.

   CAUTION: When installing midline SATA hard drives in the server blade, always install the standard hard drive screws provided with the server blade. Installing the long hard drive screws located on the hard drive spacer can damage the hard drive.

   - Install the midline SATA hard drives. Secure the hard drives to the air baffle with the standard hard drive screws.

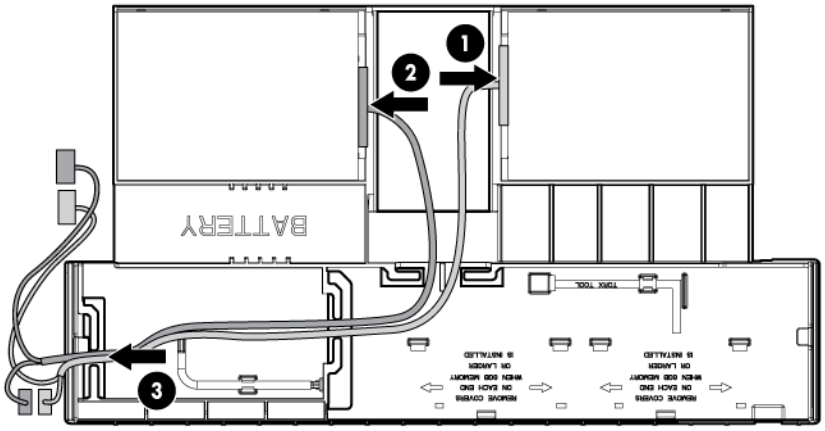


   - Install the 9.5-mm SATA hard drives and hard drive spacers. Secure the hard drives and spacers to the air baffle with the long hard drive screws. The long hard drive screws are stored on the hard drive spacer.

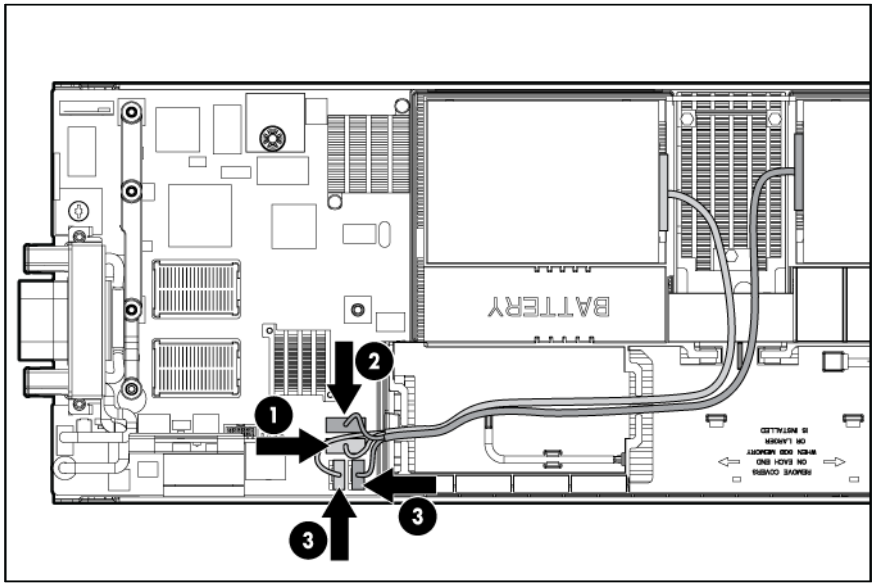


2. Connect hard drive cable 1 to hard drive 1.
3. Connect hard drive cable 2 to hard drive 2.

4. Route the cables through the air baffle.



5. Install the air baffle ("Air baffle" on page 25).
6. Connect hard drive data cable 1 to SATA connector 1 on the system board.
7. Connect hard drive data cable 2 to SATA connector 2 on the system board.
8. Connect the hard drive power cables to the hard drive power connectors on the system board. The power cables can connect to either of the hard drive power connectors on the system board.



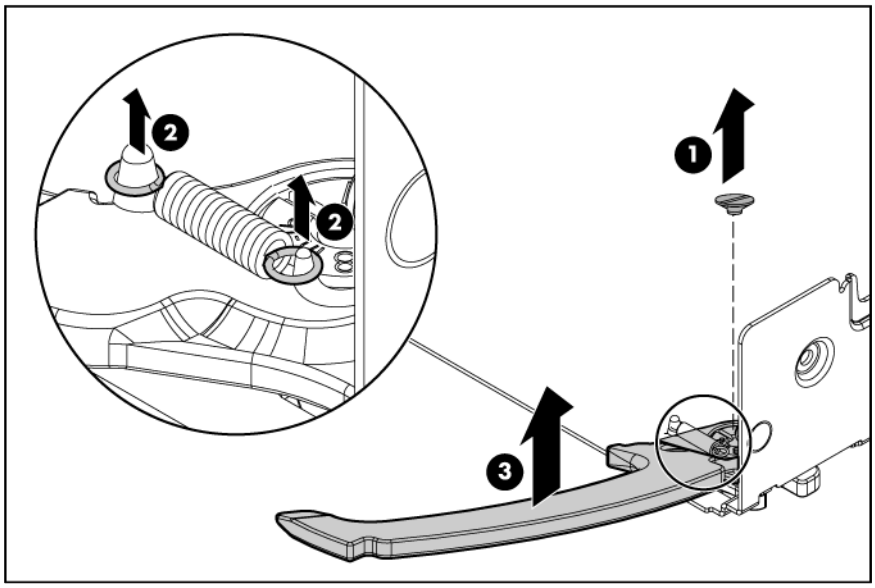
9. Install the access panel ("Access panel" on page 25).
10. Install the server blade.

Server blade release lever

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).

3. Remove the access panel ("Access panel" on page 25).
4. Remove the front bezel assembly ("Front bezel assembly" on page 28).
5. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
6. Remove the air baffle ("Air baffle" on page 25).
7. Remove the server blade release lever.



To replace the component, reverse the removal procedure.

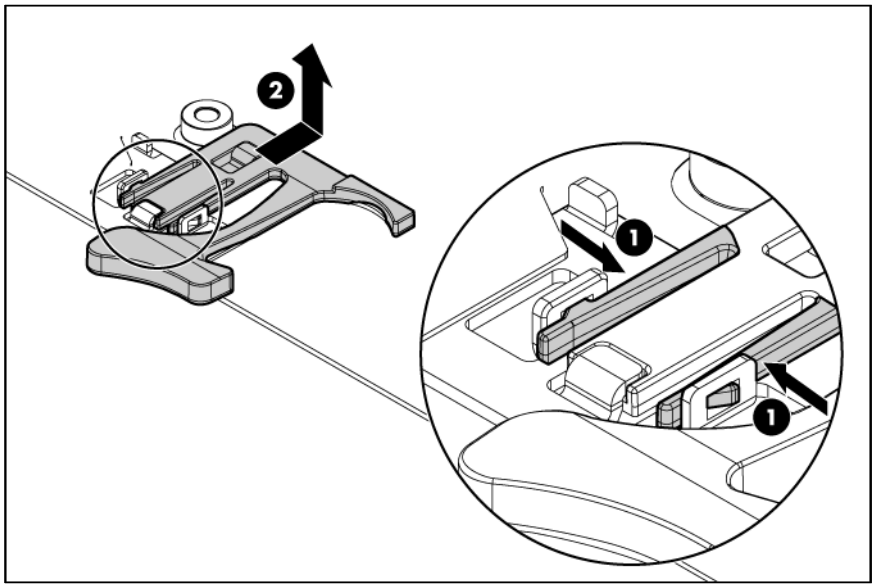
Release button

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. Remove the front bezel assembly ("Front bezel assembly" on page 28).
5. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
6. Remove all hard drives ("Hard drive" on page 29).
7. Remove the air baffle ("Air baffle" on page 25).
8. Remove the USB/SD card module ("USB/SD card module" on page 35).
9. Remove the system board.

   Removing DIMMs, heatsinks, processors, and mezzanine cards is not required for this procedure.

10. Remove the release button.



To replace the component, reverse the removal procedure.

Mezzanine card

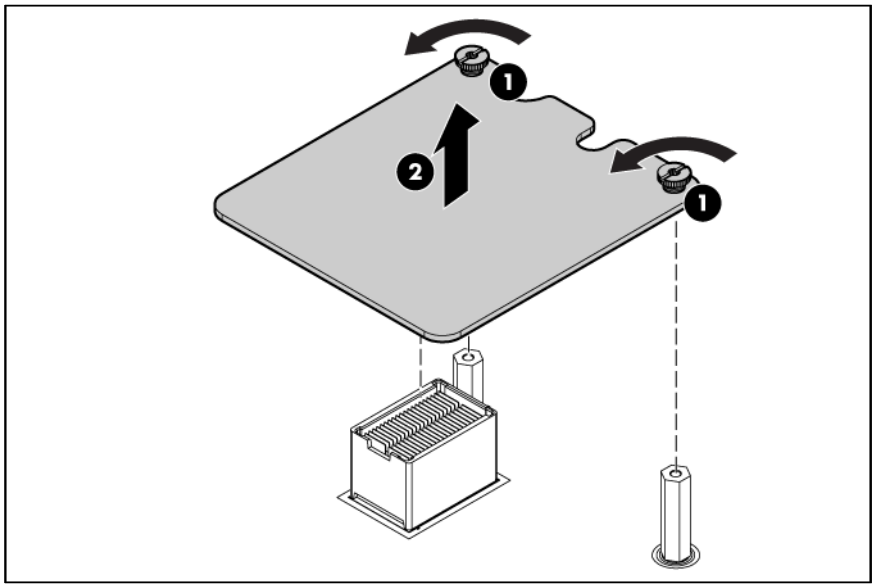
Optional mezzanine cards enable network connectivity or provide Fibre Channel support. For mezzanine card locations, see the system board components (on page 64).

Because mezzanine cards are supported on multiple server blade models, the mezzanine card may have captive screws that are not required to secure it to the server blade. When installing a mezzanine card in this server blade, only two captive screws are required.

To remove the component:

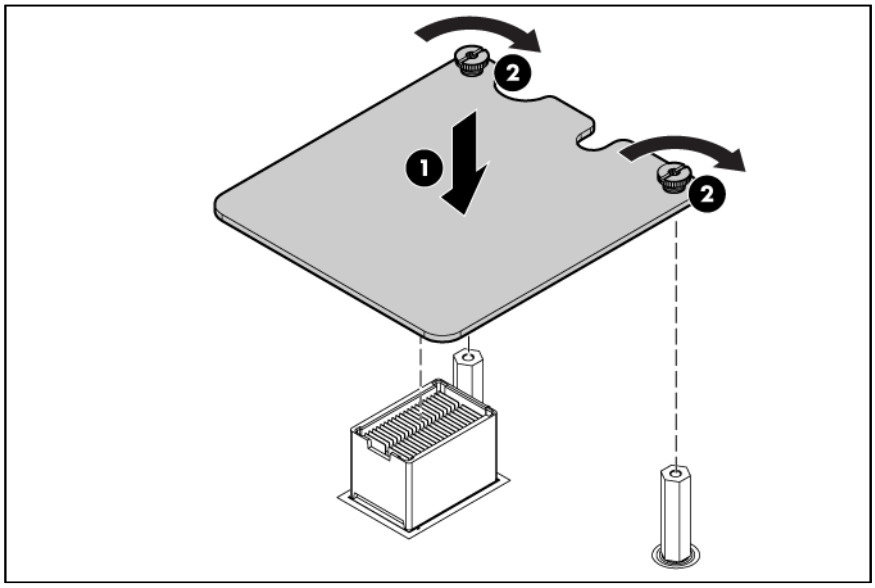
1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).

4. Remove the mezzanine card.



To replace the component:

1. Install the mezzanine card. Press down on the connector to seat the board.



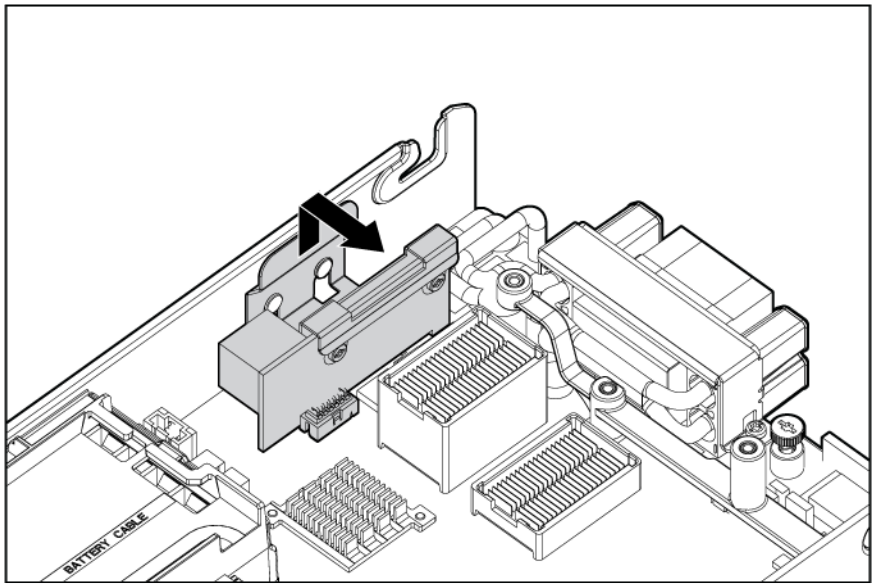
2. Install the access panel ("Access panel" on page 25).
3. Install the server blade.

USB/SD card module

To remove the component:

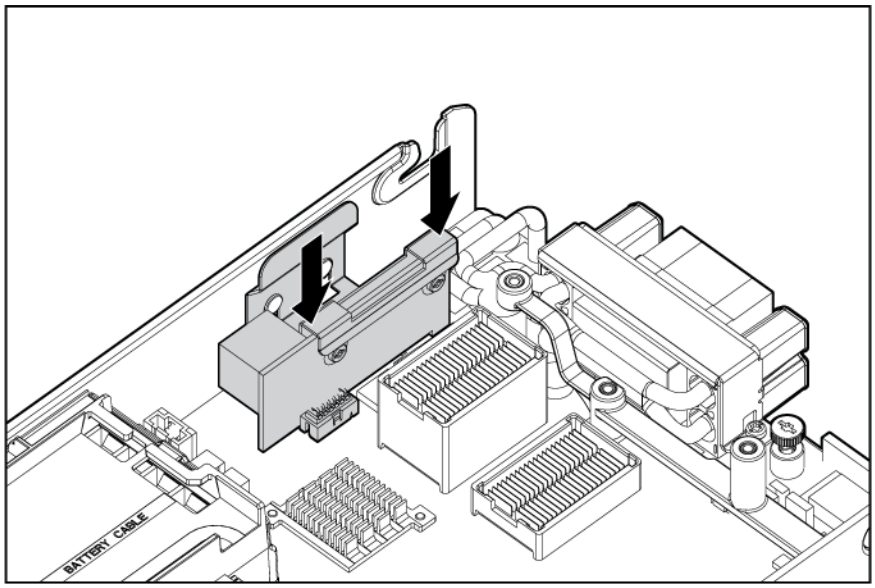
1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. Remove the USB drive key from the USB connector, if installed.

5. Remove the SD card from the SD card slot, if installed.
6. Remove the USB/SD card module from the system board.



To replace the component:

1. Align and install the USB/SD card module.
2. Press down on the metal tabs to seat the connector.

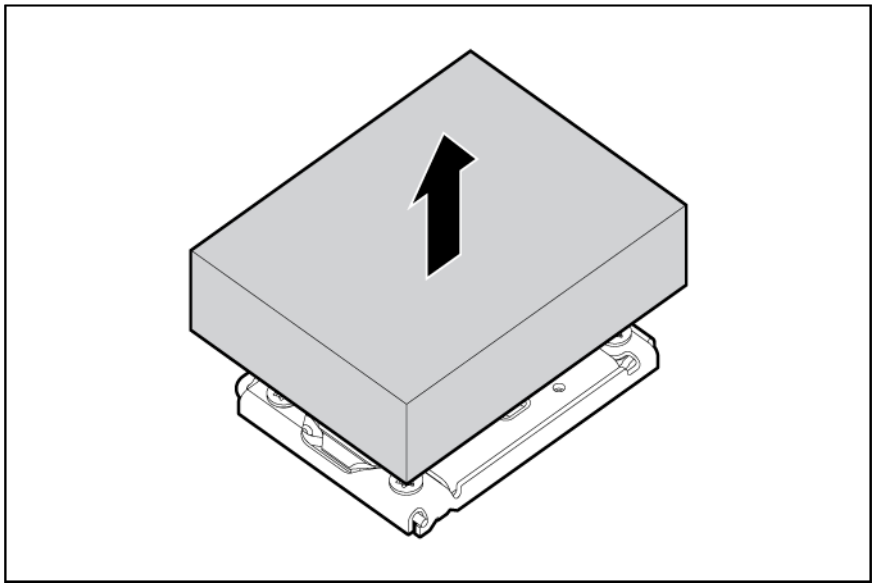


3. Install the SD card, if removed.
4. Install the USB key, if removed.
5. Install the access panel ("Access panel" on page 25).
6. Install the server blade.

Heatsink blank

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
5. Remove the air baffle ("Air baffle" on page 25).
6. Remove the heatsink blank.



To replace the component, reverse the removal procedure.

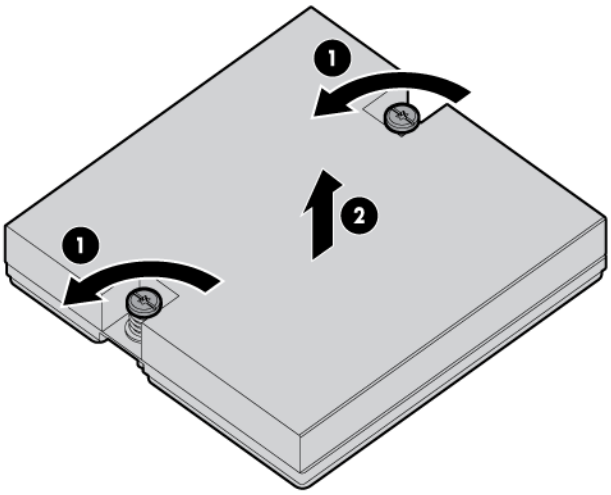
Heatsink

⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

To remove the component:

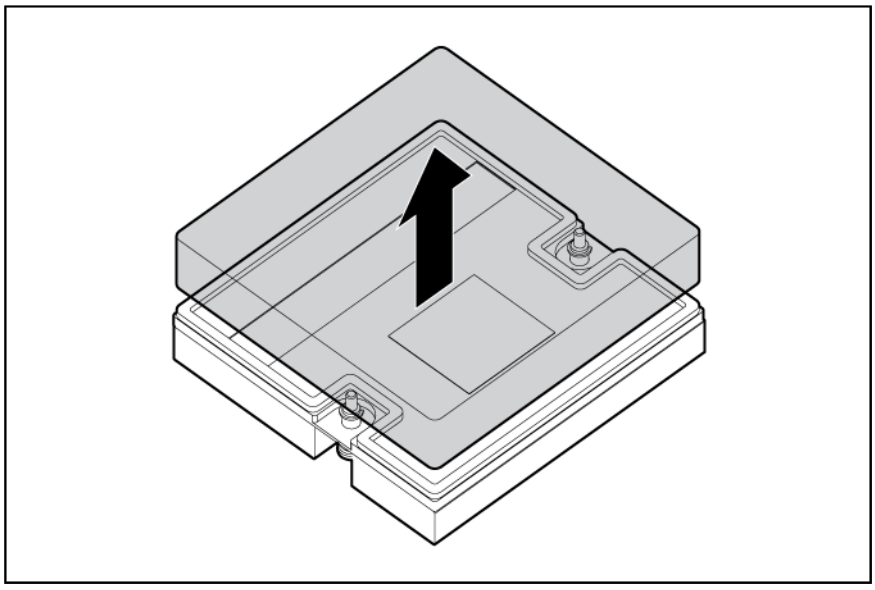
1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
5. Remove the air baffle ("Air baffle" on page 25).

6. Remove the heatsink.



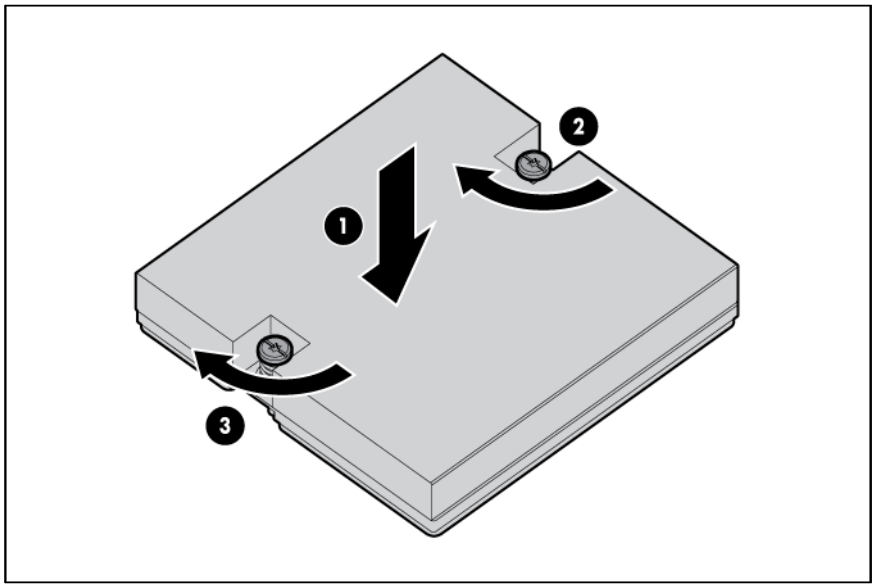
To replace the component:

1. Clean the old thermal grease from the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
2. Remove the thermal interface protective cover from the heatsink.



△ **CAUTION:** To avoid damage to the system board, processor socket, and screws, do not overtighten the heatsink screws. Use the wrench supplied with the system to reduce the possibility of overtightening the screws.

3. Align and install the heatsink. Alternate tightening the screws until the heatsink is seated properly.



4. Install the air baffle ("Air baffle" on page 25).
5. If removed, connect the hard drive power and data cables to the system board ("Hard drive connector identification" on page 66).
6. Install the access panel ("Access panel" on page 25).
7. Install the server blade.

Processor

WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: To prevent possible server malfunction, do not mix processors of different speeds or cache sizes. Refer to the label on the processor heatsink for a description of the processor.

CAUTION: To prevent possible server blade overheating, always populate each processor socket with a processor socket cover and a heatsink blank or a processor and a heatsink.

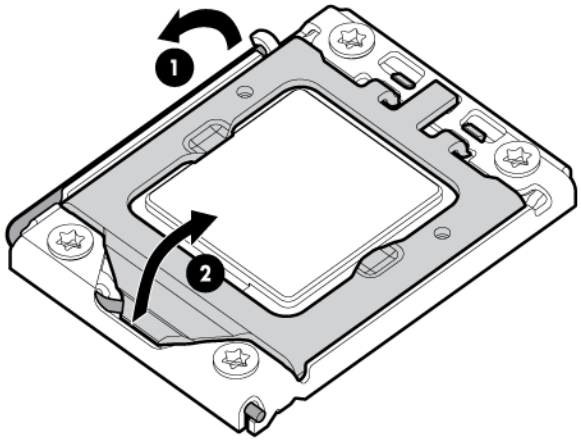
IMPORTANT: Processor socket 1 must always be populated. If processor socket 1 is empty, the server blade does not power up.

To remove the component:

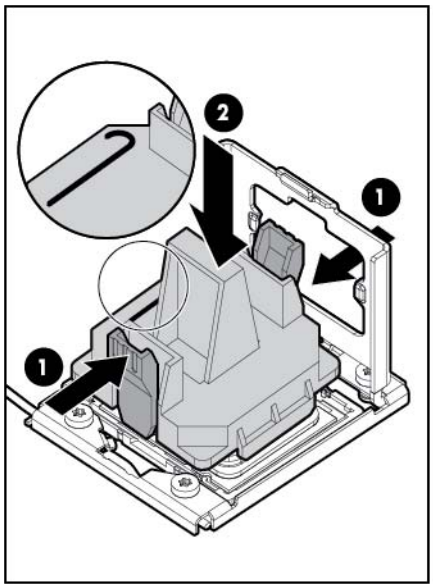
1. Update the system ROM.

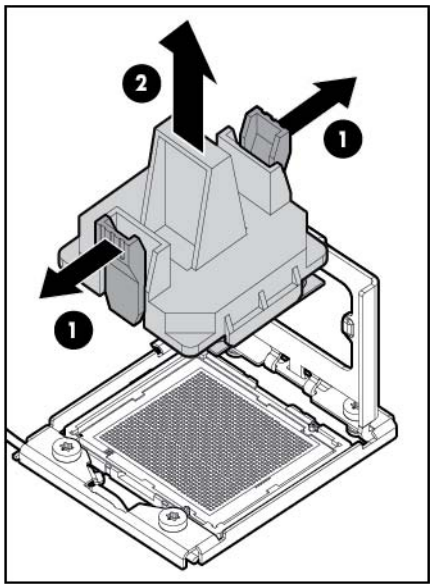
   Locate and download the latest ROM version from the HP website (http://www.hp.com/support). Follow the instructions on the website to update the system ROM.
2. Power down the server blade (on page 23).
3. Remove the server blade (on page 24).
4. Remove the access panel ("Access panel" on page 25).
5. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).

6. Remove the air baffle ("Air baffle" on page 25).
7. Remove the heatsink ("Heatsink" on page 37).
8. Open the processor locking lever and the processor socket retaining bracket.

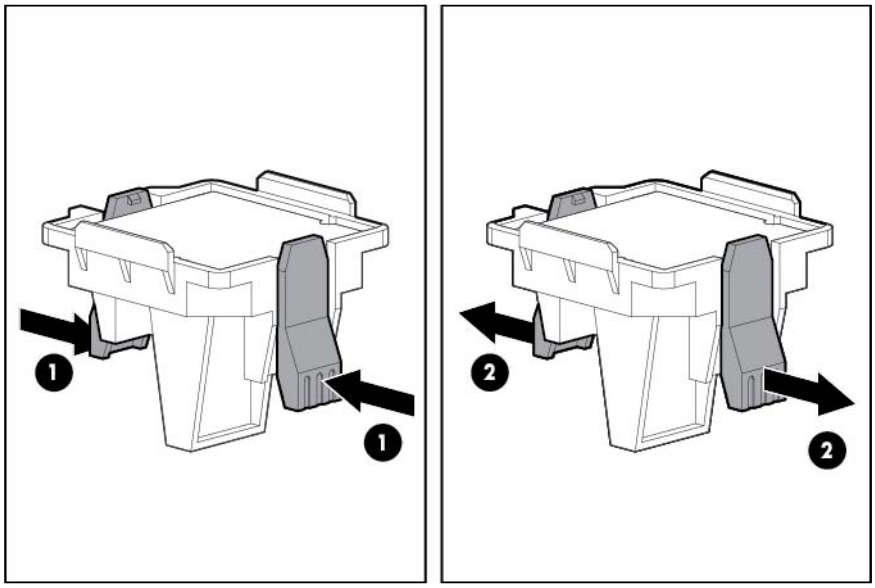


9. Using the processor tool, remove the processor from the system board:
   a. Line up the processor tool, ensuring the locking lever graphic on the tool is oriented correctly.
   b. Press in on the plastic tabs, and then place the tool on the processor.
   c. Release the tabs, and then carefully lift the processor and tool straight up.





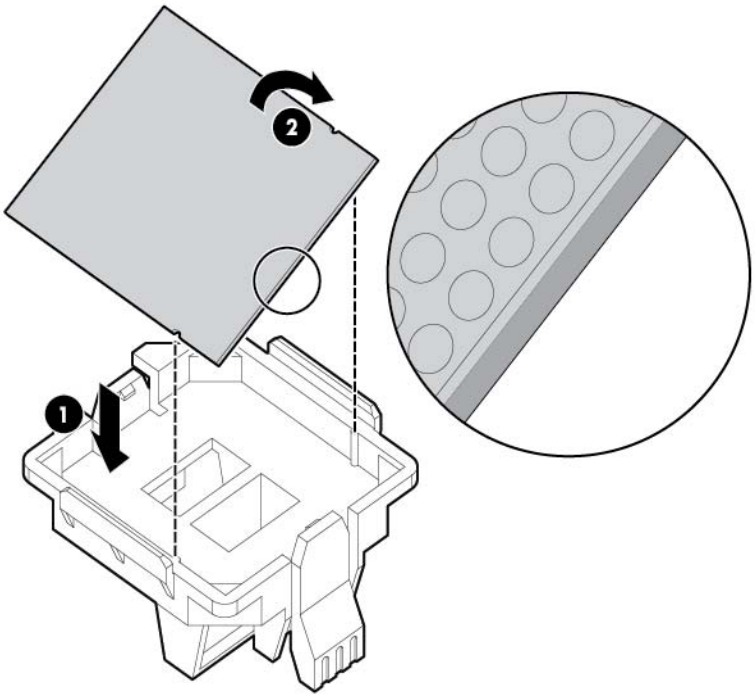
10. Carefully rotate the tool, and then push in and release the tabs to secure the processor in the tool.



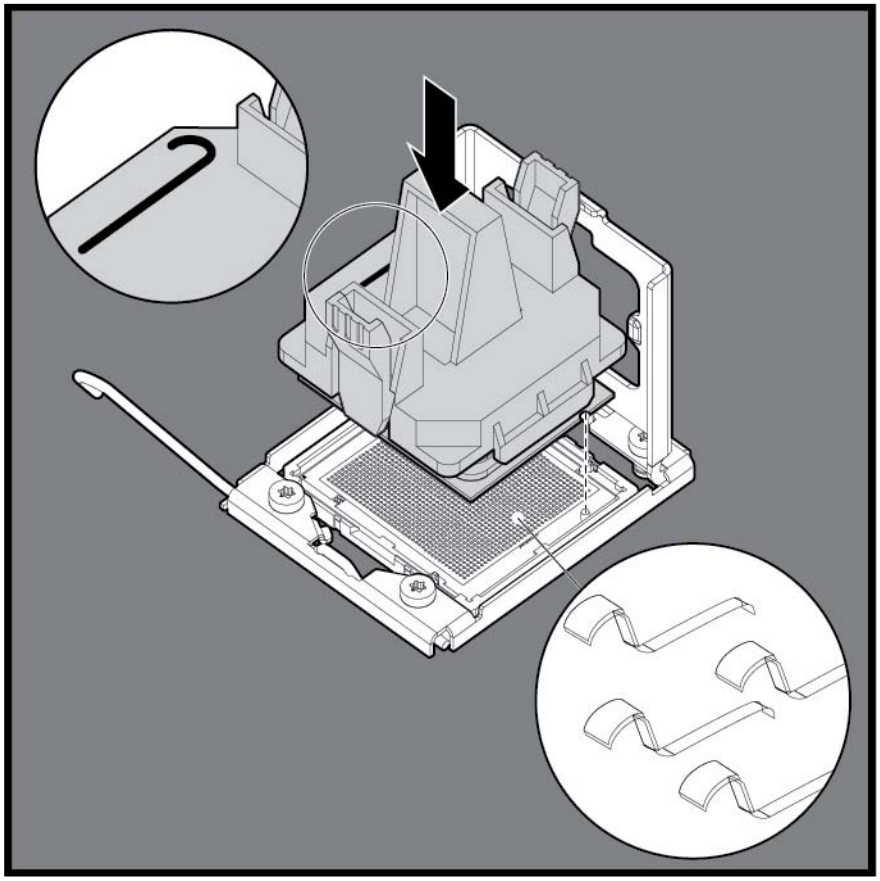
△ **CAUTION:** To avoid damage to the processor, do not touch the bottom of the processor, especially the contact area.

To replace a processor:

1. Carefully insert the processor into the processor installation tool. Handle the processor by the edges only, and do not touch the bottom of the processor, especially the contact area.



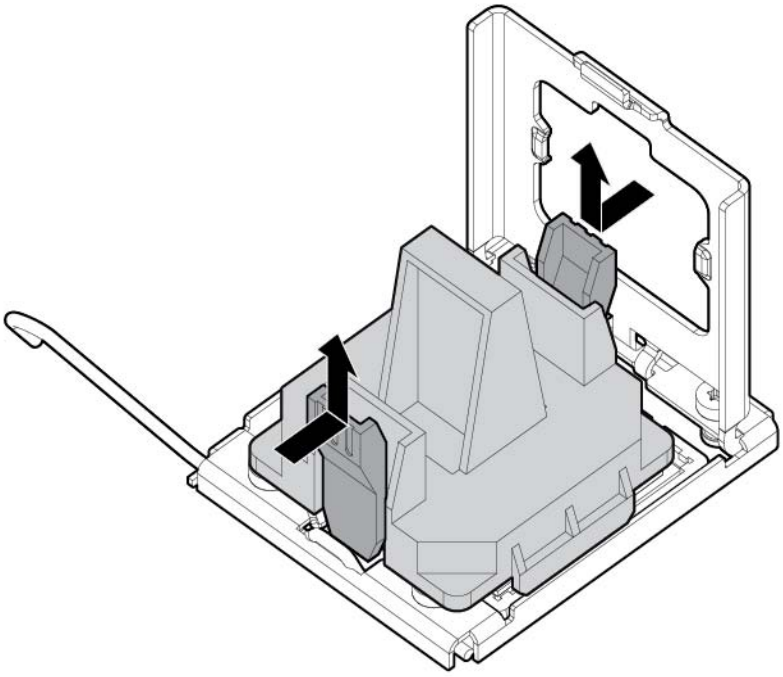
2. Be sure the tool is oriented correctly. Align the processor installation tool with the socket, and then install the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED**.



△ **CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board:

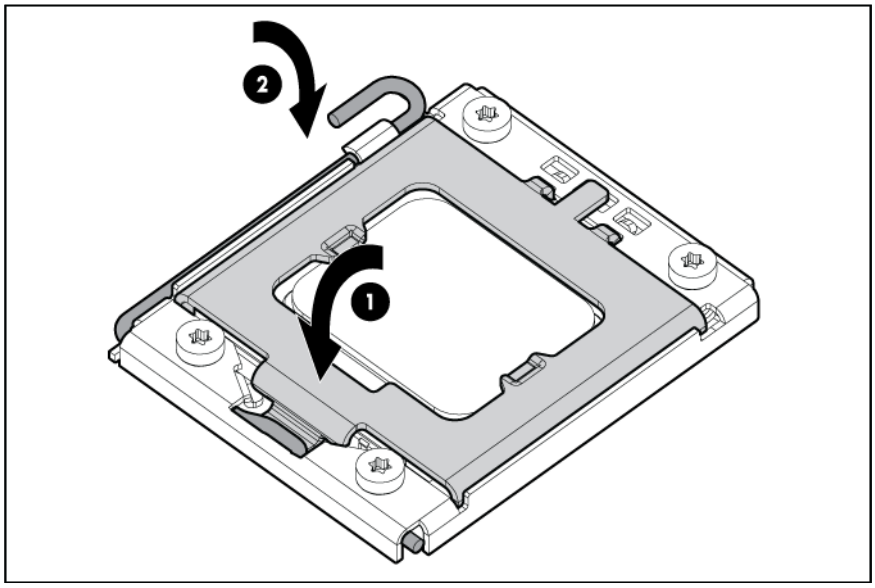
- Never install or remove a processor without using the processor installation tool.
- Do not touch the processor socket contacts.
- Do not tilt or slide the processor when lowering the processor into the socket.

3. Press and hold the tabs on the processor installation tool to separate it from the processor, and then remove the tool.



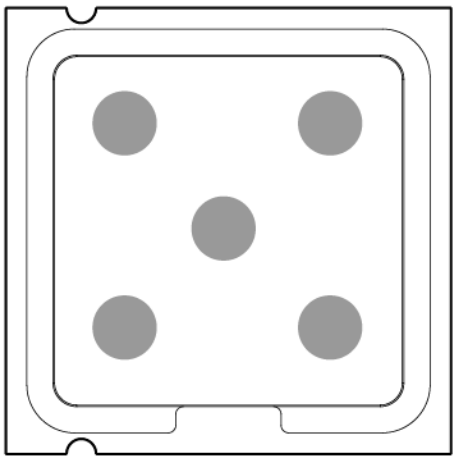
4. Close the processor socket retaining bracket and the processor locking lever.

> **CAUTION:** Be sure to close the processor socket retaining bracket before closing the processor locking lever. The lever should close without resistance. Forcing the lever closed can damage the processor and socket, requiring system board replacement.



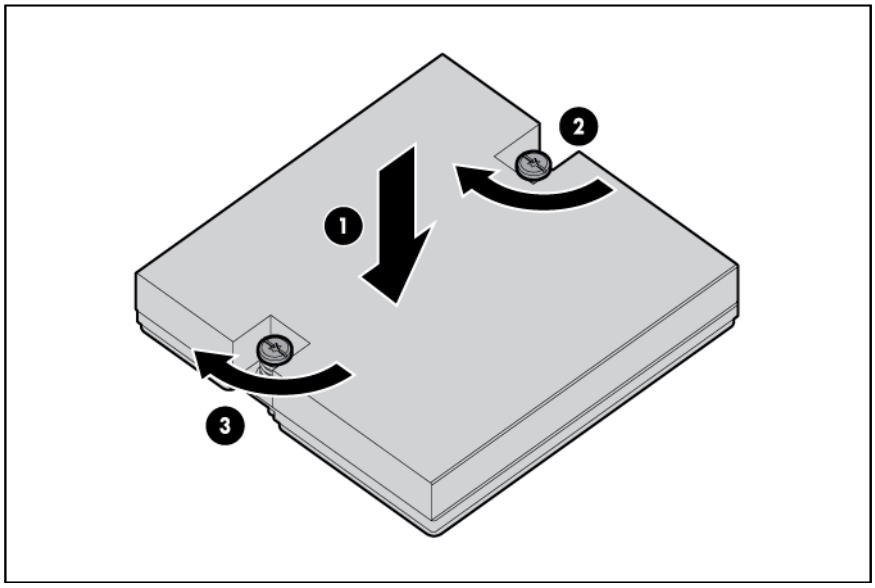
5. Clean the old thermal grease from the heatsink with the alcohol swab. Allow the alcohol to evaporate before continuing.

6. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



△ **CAUTION:** To avoid damage to the system board, processor socket, and screws, do not overtighten the heatsink screws. Use the wrench supplied with the system to reduce the possibility of overtightening the screws.

7. Align and install the heatsink. Alternate tightening the screws until the heatsink is seated properly.



8. Install the air baffle ("Air baffle" on page 25).
9. If removed, connect the hard drive power and data cables to the system board ("Hard drive connector identification" on page 66).
10. Install the access panel ("Access panel" on page 25).
11. Install the server blade.

System battery

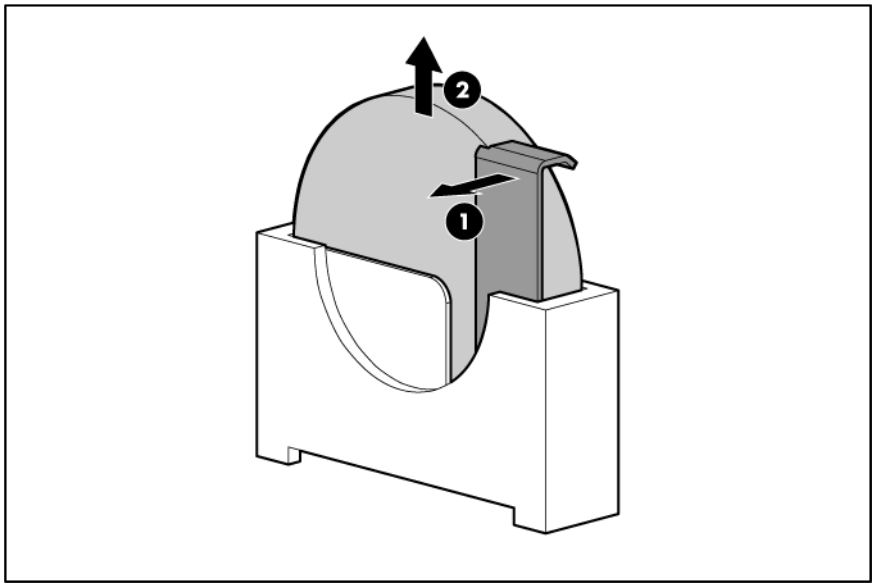
If the server blade no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).
4. Identify the battery location ("System board components" on page 64).
5. Remove the battery.



IMPORTANT: Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through RBSU.

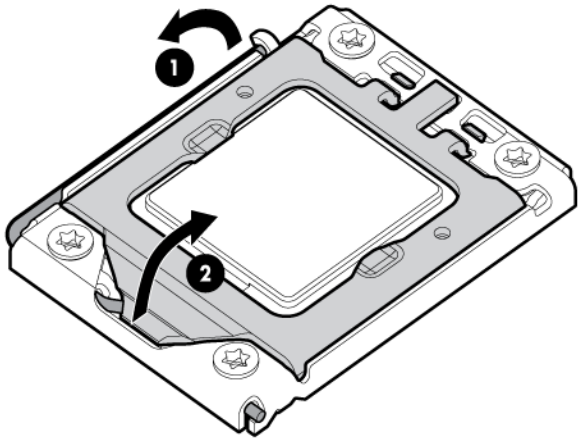
To replace the component, reverse the removal procedure.

System board

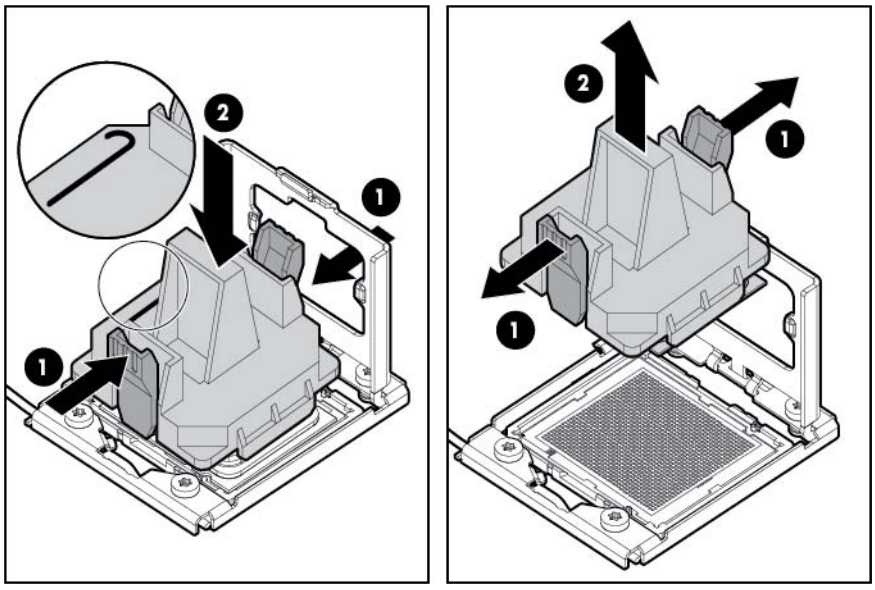
To remove the component:

1. Power down the server blade (on page 23).
2. Remove the server blade (on page 24).
3. Remove the access panel ("Access panel" on page 25).

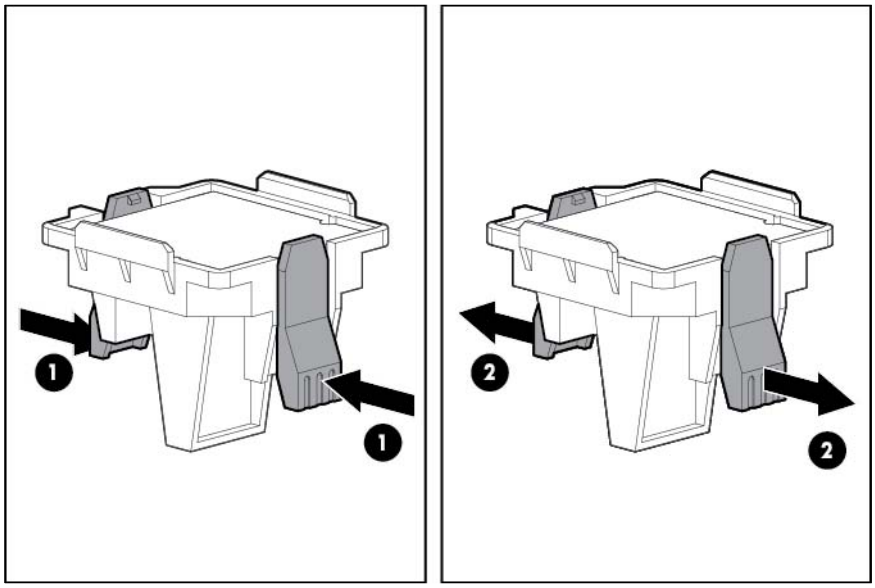
4. If installed, disconnect the hard drive power and data cables from the system board ("Hard drive connector identification" on page 66).
5. Remove the air baffle ("Air baffle" on page 25).
6. Remove all mezzanine cards ("Mezzanine card" on page 34).
7. Remove the USB/SD card module ("USB/SD card module" on page 35).
8. Remove all DIMMs ("DIMMs" on page 28).
9. Remove the heatsink ("Heatsink" on page 37).
10. Open the processor locking lever and the processor socket retaining bracket.



11. Using the processor tool, remove the processor from the system board:
    a. Line up the processor tool, ensuring the locking lever graphic on the tool is oriented correctly.
    b. Press in on the plastic tabs, and then place the tool on the processor.
    c. Release the tabs, and then carefully lift the processor and tool straight up.

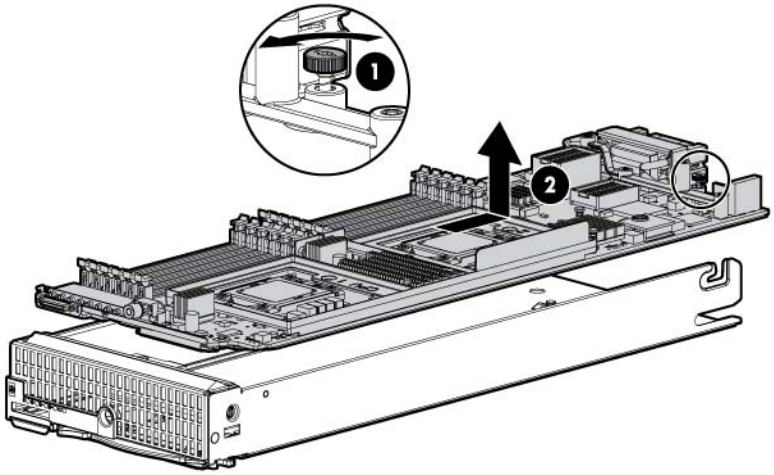


12. Carefully rotate the tool, and then push in and release the tabs to secure the processor in the tool.



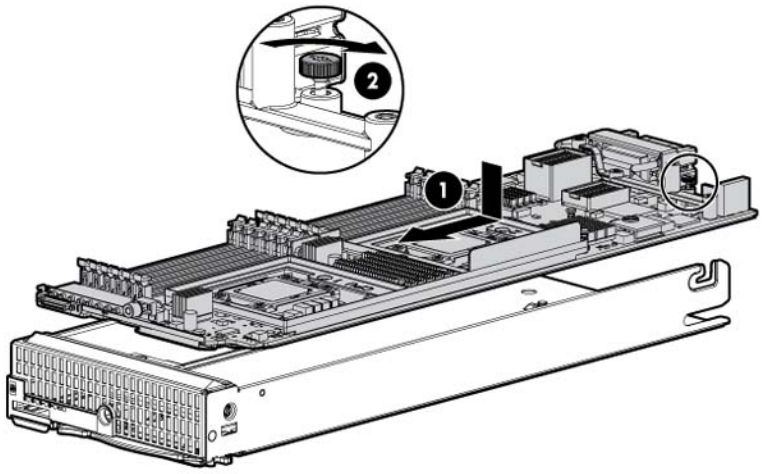
△ **CAUTION:** To avoid damage to the processor, do not touch the bottom of the processor, especially the contact area.

13. Remove the system board assembly.



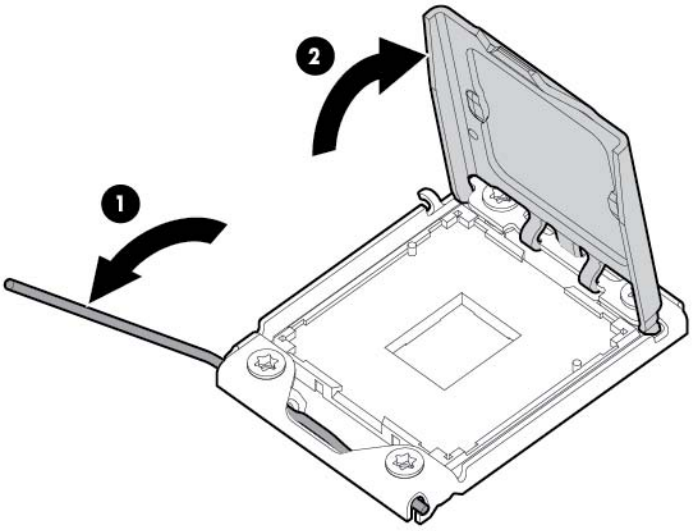
To replace the system board:

1. Install the spare system board.



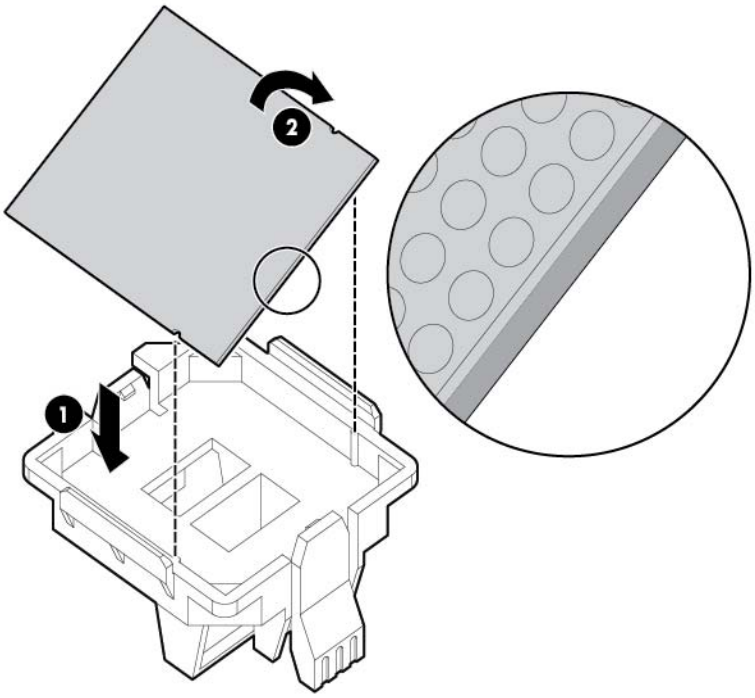
CAUTION: Failure to completely open the processor locking lever prevents the processor from seating during installation, leading to hardware damage.

2. Open the processor locking lever and the processor socket retaining bracket. **Do not remove the processor socket cover**.

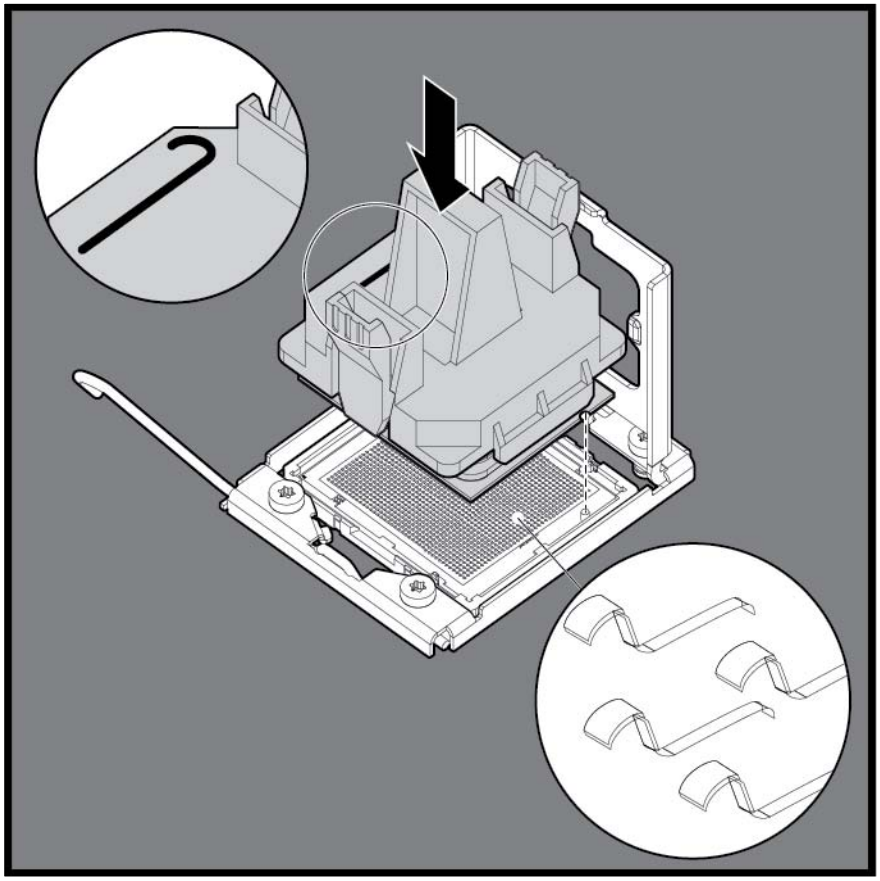


IMPORTANT: Be sure the processor remains inside the processor installation tool.

3. If the processor has separated from the installation tool, carefully re-insert the processor in the tool. Handle the processor by the edges only, and do not touch the bottom of the processor, especially the contact area.



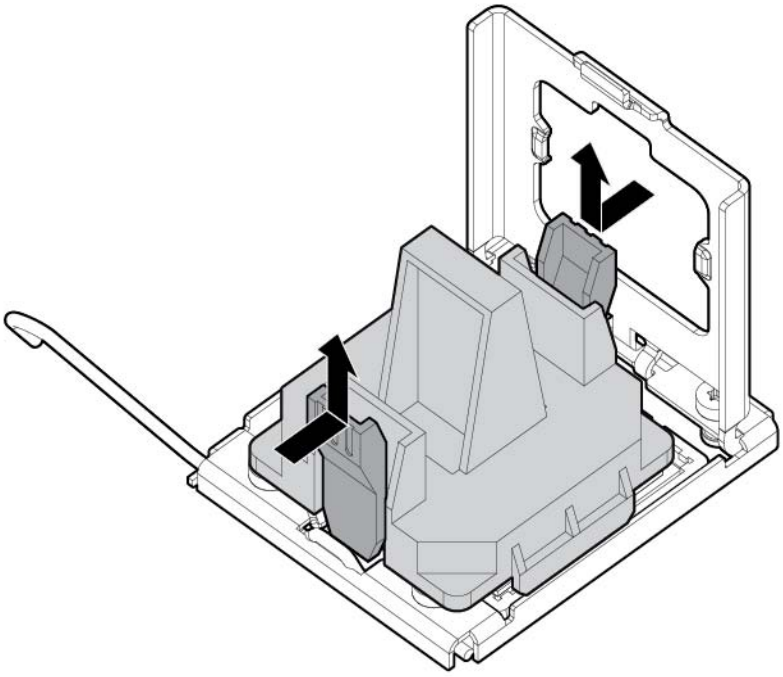
4. Align the processor installation tool with the socket, and then install the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED**.



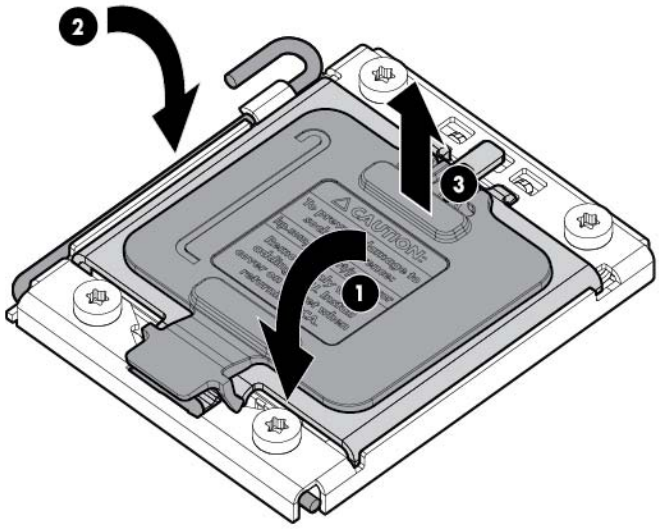
△ **CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board:

- Never install or remove a processor without using the processor installation tool.
- Do not touch the processor socket contacts.
- Do not tilt or slide the processor when lowering the processor into the socket.

5. Press the tabs on the processor installation tool to separate it from the processor, and then remove the tool.



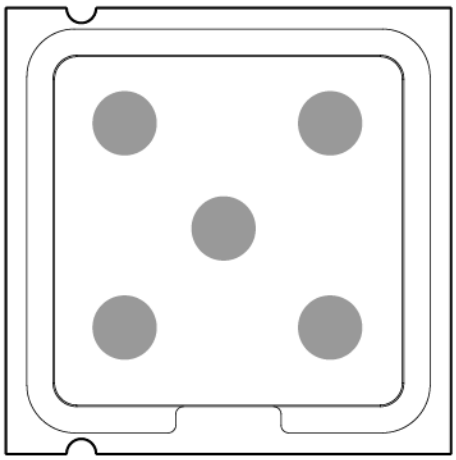
6. Close the processor socket retaining bracket and the processor locking lever. **The processor socket cover is automatically ejected**. Remove the cover.



△ **CAUTION:** Be sure to close the processor socket retaining bracket before closing the processor locking lever. The lever should close without resistance. Forcing the lever closed can damage the processor and socket, requiring system board replacement.

7. Install the processor socket cover onto the processor socket of the failed system board.
8. Clean the old thermal grease from the heatsink and the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.

9. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



10. Install the heatsink ("Heatsink" on page 37).

IMPORTANT: Install all components with the same configuration that was used on the failed system board.

11. Install all components removed from the failed system board.
12. Install the air baffle ("Air baffle" on page 25).
13. If removed, connect the hard drive power and data cables to the system board ("Hard drive connector identification" on page 66).
14. Install the access panel ("Access panel" on page 25).
15. Install the server blade.

After you replace the system board, you must re-enter the server blade serial number and the product ID.

1. During the server blade startup sequence, press the **F9** key to access RBSU.
2. Select the **Advanced Options** menu.
3. Select **Service Options**.
4. Select **Serial Number**. The following warnings appear:

   ```
   WARNING! WARNING! WARNING! The serial number is loaded into the system during the manufacturing process and should NOT be modified. This option should only be used by qualified service personnel. This value should always match the serial number sticker located on the chassis.
   ```

   ```
   Warning: The serial number should ONLY be modified by qualified personnel. This value should always match the serial number located on the chassis.
   ```

5. Press the **Enter** key to clear the warning.
6. Enter the serial number and press the **Enter** key.
7. Select **Product ID**. The following warning appears:

   ```
   Warning: The Product ID should ONLY be modified by qualified personnel. This value should always match the Product ID on the chassis.
   ```

8. Enter the product ID and press the **Enter** key.
9. Press the **Esc** key to close the menu.
10. Press the **Esc** key to exit RBSU.

11. Press the **F10** key to confirm exiting RBSU. The server blade automatically reboots.

HP Trusted Platform Module

The TPM is not a customer-removable part.

> △ **CAUTION:** Any attempt to remove an installed TPM from the system board breaks or disfigures the TPM security rivet. Upon locating a broken or disfigured rivet on an installed TPM, administrators should consider the system compromised and take appropriate measures to ensure the integrity of the system data.

If you suspect a TPM board failure, leave the TPM installed and remove the system board. Contact an HP authorized service provider for a replacement system board and TPM board.

Diagnostic tools

Troubleshooting resources

The *HP ProLiant Servers Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, error message interpretation, issue resolution, and software maintenance on ProLiant servers and server blades. This guide includes problem-specific flowcharts to help you navigate complex troubleshooting processes. To view the guide, select a language:

- English (http://www.hp.com/support/ProLiant_TSG_en)
- French (http://www.hp.com/support/ProLiant_TSG_fr)
- Italian (http://www.hp.com/support/ProLiant_TSG_it)
- Spanish (http://www.hp.com/support/ProLiant_TSG_sp)
- German (http://www.hp.com/support/ProLiant_TSG_gr)
- Dutch (http://www.hp.com/support/ProLiant_TSG_nl)
- Japanese (http://www.hp.com/support/ProLiant_TSG_jp)

The *HP BladeSystem c-Class Enclosure Troubleshooting Guide* provides procedures and solutions for troubleshooting HP BladeSystem c-Class enclosures. This guide explains how to use the Insight Display to troubleshoot enclosures, and it includes a flowchart to help you navigate the troubleshooting process. To view the guide, see the HP website (http://www.hp.com/support/BladeSystem_Enclosure_TSG_en).

HP Insight Diagnostics

HP Insight Diagnostics is a proactive server blade management tool, available in both offline and online versions, that provides diagnostics and troubleshooting capabilities to assist IT administrators who verify server blade installations, troubleshoot problems, and perform repair validation.

HP Insight Diagnostics Offline Edition performs various in-depth system and component testing while the OS is not running. To run this utility, launch the SmartStart CD.

HP Insight Diagnostics Online Edition is a web-based application that captures system configuration and other related data needed for effective server blade management. Available in Microsoft® Windows® and Linux versions, the utility helps to ensure proper system operation.

For more information or to download the utility, refer to the HP website (http://www.hp.com/servers/diags).

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 54) provides survey functionality that gathers critical hardware and software information on ProLiant server blades.

This functionality supports operating systems that may not be supported by the server blade. For operating systems supported by the server blade, see the HP website (http://www.hp.com/go/supportos).

If a significant change occurs between data-gathering intervals, the survey function marks the previous information and overwrites the survey data files to reflect the latest changes in the configuration.

Survey functionality is installed with every SmartStart-assisted HP Insight Diagnostics installation, or it can be installed through the HP PSP.

NOTE: The current version of SmartStart provides the memory spare part numbers for the server blade. To download the latest version, see the HP website (http://www.hp.com/support).

Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML timestamps each event with 1-minute granularity.

You can view recorded events in the IML in several ways, including the following:

- From within HP SIM ("HP Systems Insight Manager" on page 55)
- From within Survey Utility
- From within operating system-specific IML viewers
  - For NetWare: IML Viewer
  - For Windows®: IML Viewer
  - For Linux: IML Viewer Application
- From within the iLO 2 user interface
- From within HP Insight Diagnostics (on page 54)

For more information, see the Management CD in the HP Insight Foundation suite for ProLiant.

Array Diagnostic Utility

The HP Array Diagnostics Utility is a web-based application that creates a report of all HP storage controllers and disk drives. This report provides vital information to assist in identifying faults or conditions that may require attention. ADU can be accessed from the SmartStart CD or downloaded from the HP website (http://www.hp.com).

HP Systems Insight Manager

HP SIM is a web-based application that allows system administrators to accomplish normal administrative tasks from any remote location, using a web browser. HP SIM provides device management capabilities that consolidate and integrate management data from HP and third-party devices.

IMPORTANT: You must install and use HP SIM to benefit from the Pre-Failure Warranty for processors, SAS and SATA hard drives, and memory modules.

For additional information, refer to the Management CD in the HP ProLiant Essentials Foundation Pack or the HP SIM website (http://www.hp.com/go/hpsim).

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring 24 x 7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- HP Insight Remote Support Standard: This software supports server and storage devices and is optimized for environments with 1–50 servers. Ideal for customers who can benefit from proactive notification but do not need proactive service delivery and integration with a management platform.
- HP Insight Remote Support Advanced: This software provides comprehensive remote monitoring and proactive service support for nearly all HP servers, storage, network, and SAN environments, plus selected non-HP servers that have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available on the HP website (http://www.hp.com/go/insightremotesupport).

To download the software, go to Software Depot (http://www.software.hp.com).

Select **Insight Remote Support** from the menu on the right.

USB support and functionality

USB support

HP provides both standard USB 2.0 support and legacy USB 2.0 support. Standard support is provided by the OS through the appropriate USB device drivers. Before the OS loads, HP provides support for USB devices through legacy USB support, which is enabled by default in the system ROM.

Legacy USB support provides USB functionality in environments where USB support is not available normally. Specifically, HP provides legacy USB functionality for the following:

- POST
- RBSU
- Diagnostics
- DOS
- Operating environments which do not provide native USB support

Internal USB functionality

An internal USB connector is available for use with security key devices and USB drive keys. This solution provides for use of a permanent USB key installed in the internal connector, avoiding issues of clearance on the front of the rack and physical access to secure data.

External USB functionality

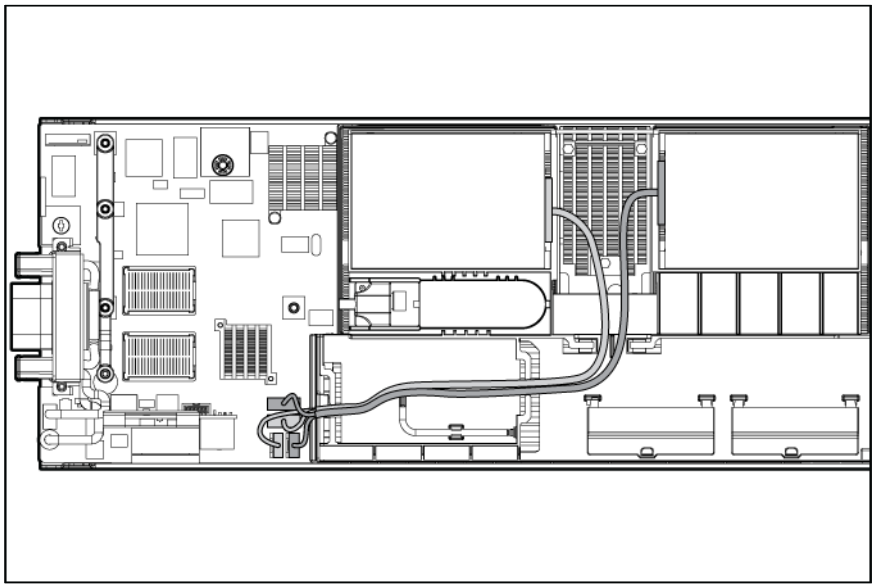
HP provides external USB support to enable local connection of USB devices for server blade administration, configuration, and diagnostic procedures. For more information, see "Using the HP c-Class Blade SUV Cable (on page 59)."

For additional security, external USB functionality can be disabled through RBSU. Disabling external USB support in RBSU disables the USB connectors on the HP c-Class Blade SUV Cable.

Cabling

SATA hard drive cabling

CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

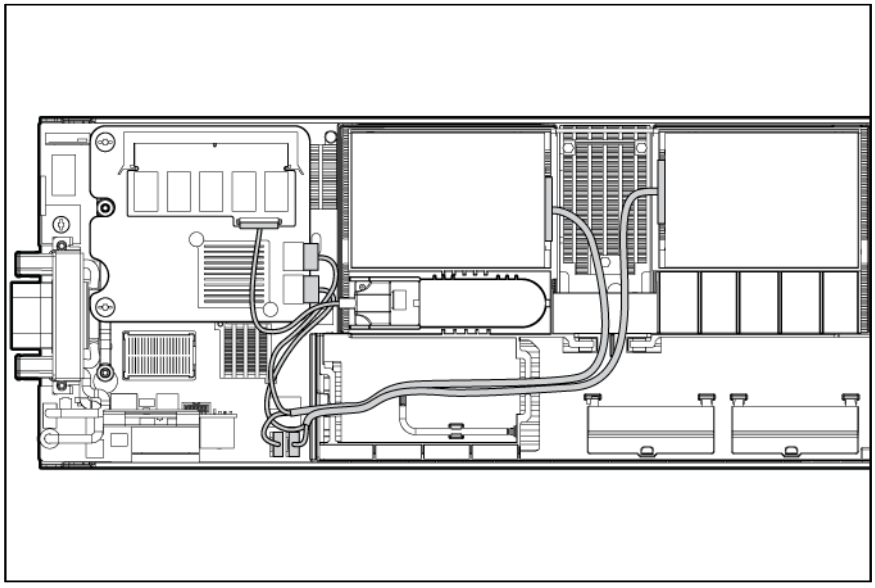


Optional SAS hard drive cabling

CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

The server blade supports SAS hard drives when the HP Smart Array P712m Controller is installed. For more information, see the documentation that ships with the option or the server blade user guide.

For more information about the hard drive connectors, see "Hard drive connector identification (on page 66)."



Using the HP c-Class Blade SUV Cable

The HP c-Class Blade SUV Cable enables the user to perform server blade administration, configuration, and diagnostic procedures by connecting video and USB devices directly to the server blade. For SUV cable connectors, see "HP c-Class Blade SUV Cable (on page 67)."

Connecting locally to a server blade with video and USB devices

Use the SUV cable to connect a monitor and any of the following USB devices:

- USB hub
- USB keyboard
- USB mouse
- USB CD/DVD-ROM drive
- USB diskette drive

Numerous configurations are possible. This section offers two possible configurations. For more information, see "USB support and functionality (on page 56)."

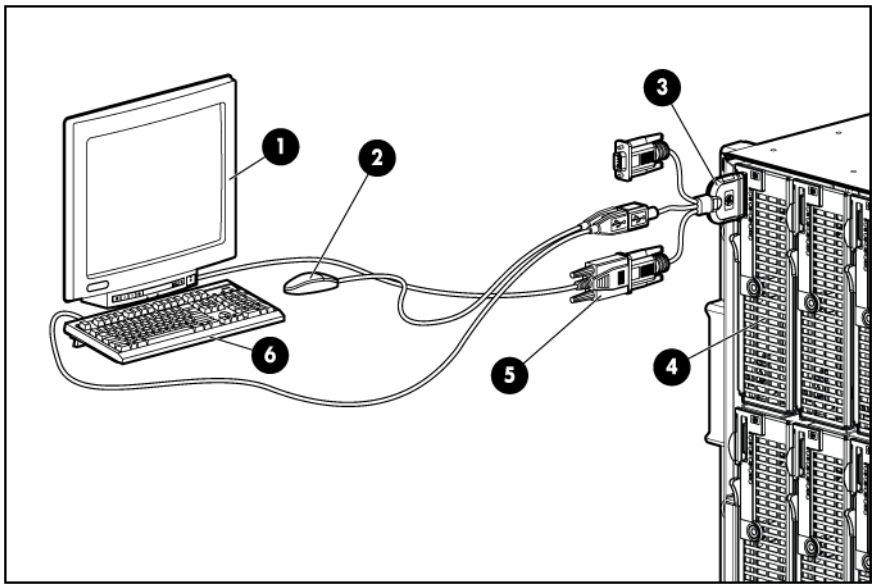
Accessing a server blade with local KVM

For this configuration, a USB hub is not necessary. To connect additional devices, use a USB hub.

△ **CAUTION:** Before disconnecting the SUV cable from the connector, always squeeze the release buttons on the sides of the connector. Failure to do so can result in damage to the equipment.

1. Connect the SUV cable to the server blade.

2. Connect the video connector to a monitor.
3. Connect a USB mouse to one USB connector.
4. Connect a USB keyboard to the second USB connector.



Item	Description
1	Monitor
2	USB mouse
3	HP c-Class Blade SUV Cable
4	Server blade
5	Video connector
6	USB keyboard

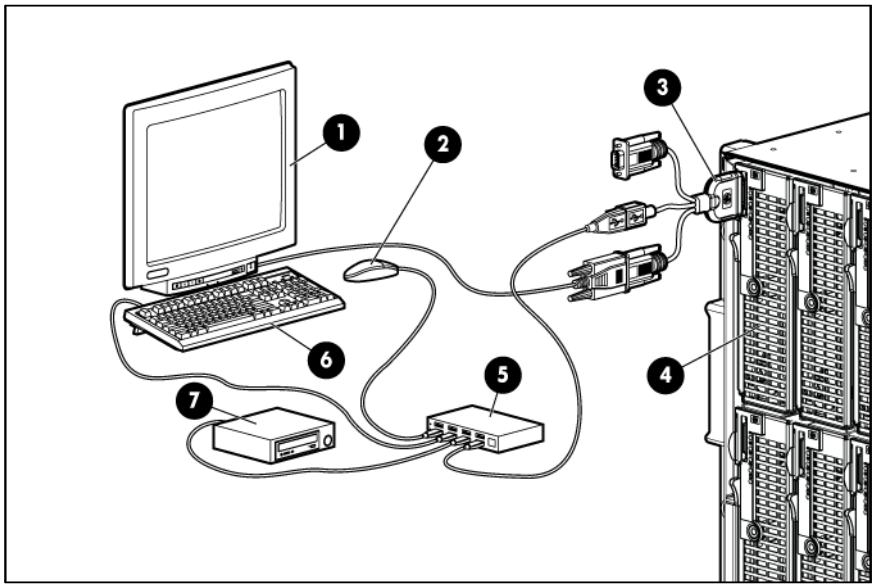
Accessing a server blade with local media devices

Use the following configuration when configuring a server blade or loading software updates and patches from a USB CD/DVD-ROM or a USB diskette.

Use a USB hub when connecting a USB diskette drive and/or USB CD-ROM drive to the server blade. The USB hub provides additional connections.

1. Connect the SUV cable to the server blade.
2. Connect the video connector to a monitor.
3. Connect a USB hub to one USB connector.
4. Connect the following to the USB hub:
   - USB CD/DVD-ROM drive
   - USB keyboard
   - USB mouse

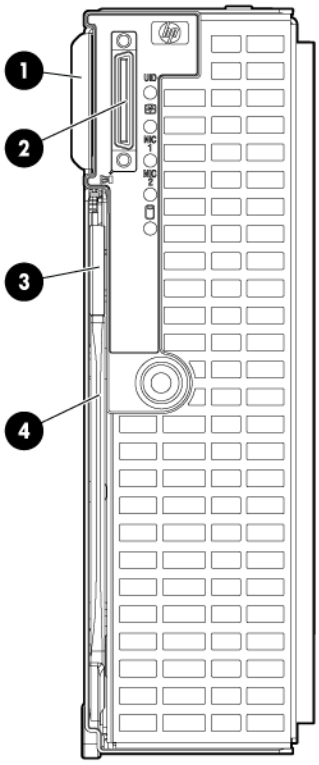
- USB diskette



Item	Description
1	Monitor
2	USB mouse
3	HP c-Class Blade SUV Cable
4	Server blade
5	USB hub
6	USB keyboard
7	USB CD/DVD-ROM drive or diskette drive

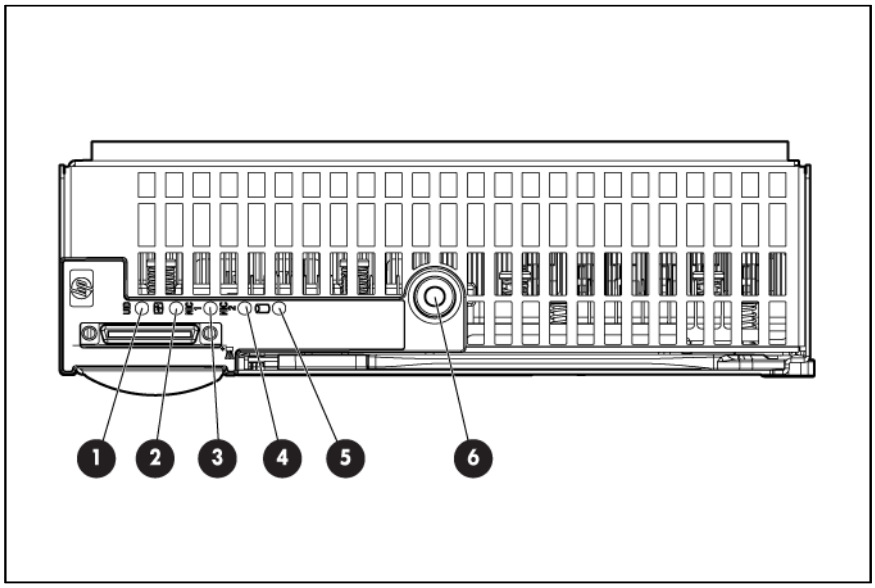
Component identification

Front panel components



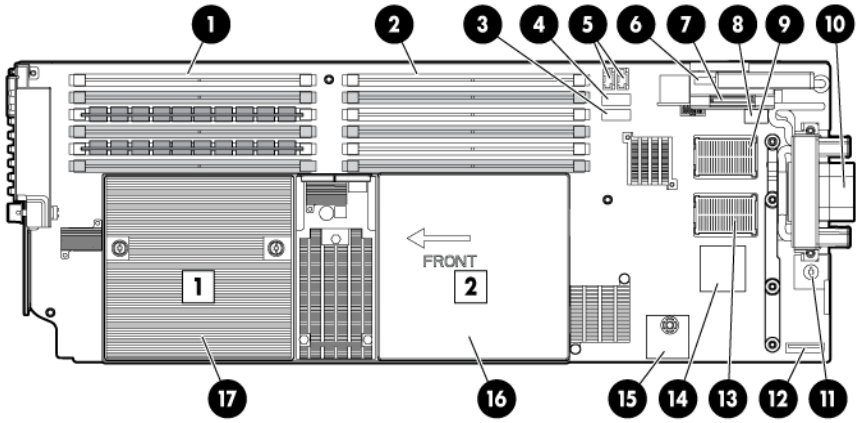
Item	Description
1	Serial label pull tab
2	HP c-Class Blade SUV Cable connector
3	Release button
4	Server blade release lever

Front panel LEDs and buttons



Item	Description	Status
1	UID LED	Blue = Identified Blue flashing = Active remote management Off = No active remote management
2	Health LED	Green = Normal Amber flashing = Degraded condition Red flashing = Critical condition
3	NIC 1 LED	Green = Network linked Green flashing = Network activity Off = No link or activity
4	NIC 2 LED	Green = Network linked Green flashing = Network activity Off = No link or activity
5	Hard drive activity LED	Green = Activity Off = No activity
6	Power On/Standby button and system power LED	Green = On Amber = Standby (auxiliary power available) Off = Off

System board components



Item	Description
1	Processor 1 DIMMs (6)
2	Processor 2 DIMMs (6)
3	SATA connector 2
4	SATA connector 1
5	Hard drive power connectors (2)
6	USB connector
7	SD card slot
8	System maintenance switch
9	Mezzanine connector 2 (Type I or II)
10	Enclosure connector
11	System board thumbscrew
12	System battery
13	Mezzanine connector 1 (Type I)
14	Embedded NICs (2)
15	TPM connector
16	Processor socket 2 (with blank)
17	Processor socket 1 (populated)

The symbols correspond to the symbols located on the interconnect bays. For more information, see the *HP ProLiant BL280c G6 Server Blade Installation Instructions* that ship with the server blade.

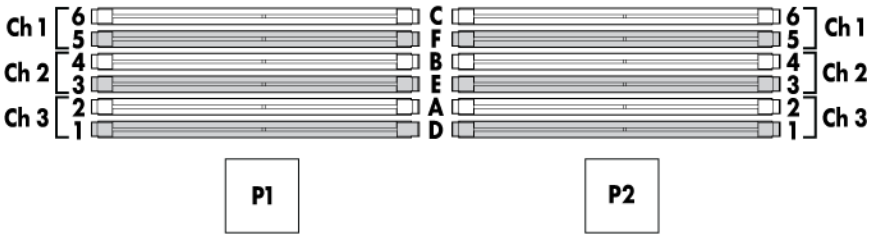
Mezzanine connector definitions

A PCIe x8 mezzanine connector supports x16 cards at up to x8 speeds.

Item	PCIe
Mezzanine connector 1	x8, Type I mezzanine card only
Mezzanine connector 2	x8, Type 1 or II mezzanine card

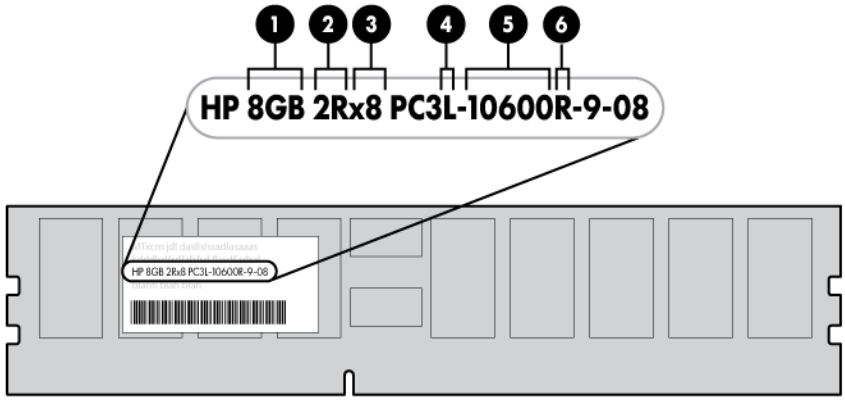
DIMM slot locations

DIMM slots are numbered sequentially (1 through 6) for each processor. The supported AMP modes use the letter assignments for population guidelines.



DIMM identification

To determine DIMM characteristics, use the label attached to the DIMM and the following illustration and table.

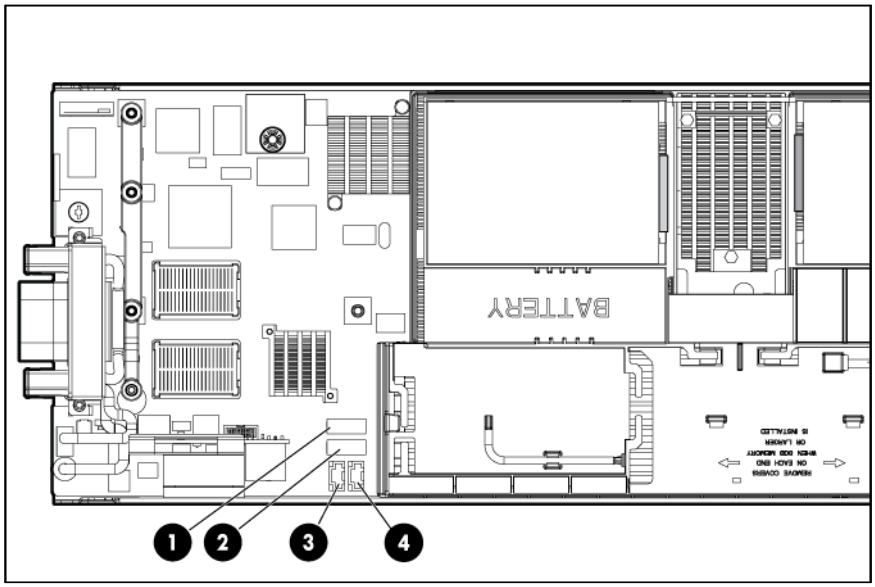


Item	Description	Definition
1	Size	—
2	Rank	1R = Single-rank 2R = Dual-rank 4R = Quad-rank
3	Data width	x4 = 4-bit x8 = 8-bit
4	Voltage rating	L = Low voltage (1.35v) Blank or omitted = Standard
5	Memory speed	10600 = 1333-MHz 8500 = 1066-MHz

Item	Description	Definition
6	DIMM type	R = RDIMM (registered) E = UDIMM (unbuffered with ECC)

For the latest supported memory information, see the QuickSpecs on the HP website (http://www.hp.com).

Hard drive connector identification



Item	Description	Connector color
1	SATA connector 2	Black
2	SATA connector 1	White
3	Hard drive power connector	Black
4	Hard drive power connector	Black

System maintenance switch

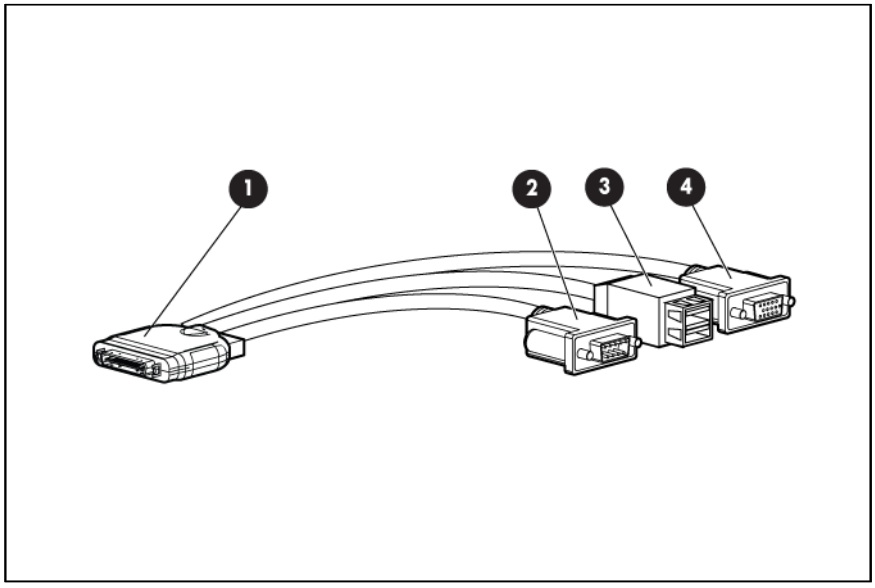
Position	Default	Function
S1	Off	Off = iLO 2 security is enabled. On = iLO 2 security is disabled.
S2	Off	Off = System configuration can be changed. On = System configuration is locked.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6	Off	Off = No function On = Clear NVRAM
S7	—	Reserved
S8	—	Reserved

Position	Default	Function
S9	—	Reserved
S10	—	Reserved

When the system maintenance switch position 6 is set to the On position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM.

△ **CAUTION:** Clearing CMOS and/or NVRAM deletes configuration information. Be sure to properly configure the server or data loss could occur.

HP c-Class Blade SUV Cable



Item	Connector	Description
1	Server blade	For connecting to the SUV connector on the server blade front panel
2	Video	For connecting a video monitor
3	USB	For connecting up to two USB devices
4	Serial	For trained personnel to connect a null modem serial cable and perform advanced diagnostic procedures

Specifications

Environmental specifications

Specification	Value
Temperature range*	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (noncondensing)**	—
Operating	10% to 90% @ 28°C (82.4°F)
Non-operating	5% to 95% @ 38.7°C (101.7°F)
Altitude†	—
Operating	3050 m (10,000 ft)
Non-operating	9144 m (30,000 ft)

* The following temperature conditions and limitations apply:
  - All temperature ratings shown are for sea level.
  - An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) up to 3048 m (10,000 ft) applies.
  - No direct sunlight is allowed.
  -The maximum permissible rate of change is 10°C/hr (18°F/hr).
  - The type and number of options installed may reduce the upper temperature and humidity limits.
  - Operating with a fan fault or above 30°C (86°F) may reduce system performance.

** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F).

†Maximum storage altitude corresponds to a minimum pressure of 70 kPa (10.1 psia).

Server blade specifications

Specification	Value
Height	18.06 cm (7.11 in)
Depth	50.95 cm (20.06 in)
Width	5.14 cm (2.03 in)
Weight (maximum)	6.58 kg (14.50 lb)
Weight (minimum)	4.26 kg (9.40 lb)

Acronyms and abbreviations

CSR

Customer Self Repair

HP SIM

HP Systems Insight Manager

iLO 2

Integrated Lights-Out 2

IML

Integrated Management Log

NVRAM

non-volatile memory

PSP

ProLiant Support Pack

RBSU

ROM-Based Setup Utility

SSD

solid-state drive

SUV

serial, USB, video

TPM

trusted platform module

UID

unit identification

Index

A

access panel 25
additional information 54
ADU (Array Diagnostic Utility) 55
air baffle 25
Array Diagnostic Utility (ADU) 55

B

batteries, replacing 45
battery 45, 64
buttons 62

C

cables 58, 59
cabling 58, 59
cabling, hard drive 58
cabling, optional SAS controller 58
cabling, SAS hard drive 58
cautions 22
components 16, 22, 45, 53, 62
components, identification 62
connectors 62
CSR (customer self repair) 5
customer self repair (CSR) 5

D

diagnostic tools 54
diagnostics utility 54
DIMM banks, population 28
DIMM identification 65
DIMM slot locations 64, 65
DIMMs 28, 64

E

electrostatic discharge 22
enclosure connector 64
enclosure connector cover 64
environmental specifications 68
external cables 59
external USB functionality 57

F

features 62
Fibre Channel mezzanine 34
front bezel 28
front bezel assembly 28
front panel buttons 63
front panel components 62
front panel LEDs 63

H

hard drive cable 29
hard drive cable connector 29, 64
hard drive cage 29
hard drive connector 66
hard drive data connector 64, 66
hard drive LEDs 63
hard drive power connector 29, 64, 66
hard drives 29
health LEDs 63
heatsink 37
heatsink blank 37
HP c-Class Blade SUV Cable 59, 60, 62, 67
HP Insight Diagnostics 22, 54
HP Insight Diagnostics survey functionality 54
HP Insight Remote Support software 56
HP ProLiant Essentials Foundation Pack 55
HP Systems Insight Manager overview 55

I

illustrated parts catalog 16
IML (Integrated Management Log) 55
Insight Diagnostics 22, 54
Integrated Management Log (IML) 55
internal cables 58
internal USB connector 64
internal USB functionality 56

L

LED, health 63
LED, power button 63
LED, system power 63

LEDs 62
LEDs, hard drive 63
LEDs, NIC 63
LEDs, unit identification (UID) 63
local KVM, accessing a server blade with 59
local media devices, accessing 60

M

management tools 54
memory 28, 65
mezzanine board connectors 64
mezzanine card 34
mezzanine connectors 64

N

NIC (network interface card) 64

P

part numbers 16
power button LED 63
Power On/Standby button 63
powering down 23
preparation procedures 23
processor socket 39, 64
processor tool 39, 45
processors 39, 64

R

release button 33, 62
removal and replacement procedures 22
removing the server blade 24
removing the system board 45
replacement procedures 22
required tools 22
ROM legacy USB support 56

S

safety considerations 22
safety information 22
SATA connectors 66
SD card slot 35
serial connector 67
serial label pull tab 62
server blade release lever 32, 62
server blade removal 24
server blade specifications 68
specifications 68
specifications, environmental 68
specifications, server blade 68
static electricity 22
SUV connector 59, 62, 67
symbols on equipment 23
system battery 45
system board 45, 64
system board battery 64
system board components 64
system components 62
system maintenance switch 64, 66
system power LED 63
Systems Insight Manager 55

T

tool, processor 39, 45
tools 22, 54
Torx screwdriver 22
TPM (Trusted Platform Module) 53
TPM connector 64
troubleshooting 54
troubleshooting resources 54
Trusted Platform Module (TPM) 53

U

UID LED 63
USB connectors 64, 67
USB drive key 35
USB drive key/SD card riser board assembly 35
USB support 56
USB/SD card module 35
utilities 54

V

video connector 67
video connector cabling 67
video devices 59

W

warnings 22
warranty 5